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PAPER TRADE JOURNAL

VOL. 123, NO. 6 AUGUST 8, 1946

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RAYCO LINTER COTTON

OPA Authorizes Wholesale Markups to Cover Costs
Marathon Promotes Kelly at Rothschild Plant
State Department Praises McCabe's Results
Smith Paper Grants Further Benefits

Fibreboard Products to Spend 24 Million in Growth
Arkell & Smith to Build New Plant at Mobile
OPA Eases Prices on Paperbox Materials
Norwood Creditor Ask for Receiver

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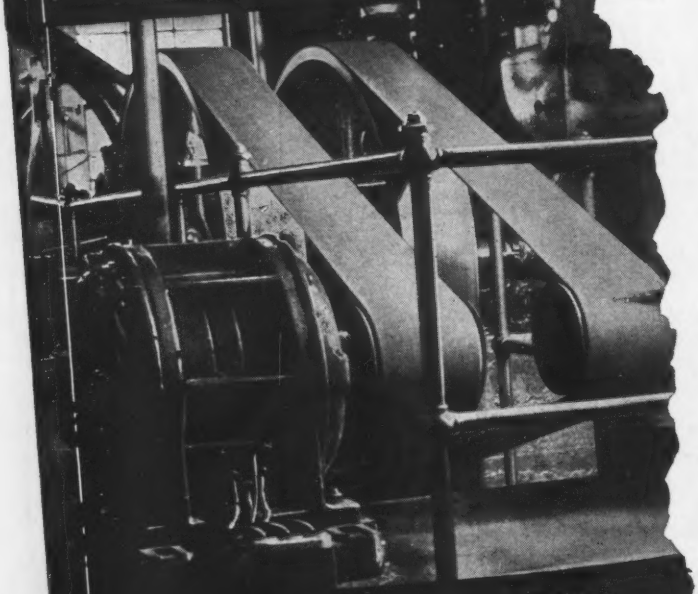
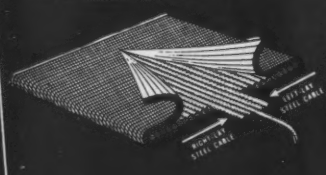


GOODYEAR INDUSTRIAL RUBBER PRODUCTS

GTM-Specified COMPASS 250 STEEL CABLE TRANSMISSION BELT for Heavy-Duty Drives



The Goodyear COMPASS 250 Steel Cable Transmission Belt is bodied with multi-strand airplane-type cable, spiraled continuously without a splice. Cable on opposing sides of belt axis is twisted opposite directions to insure true running.

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GOODYEAR

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PAPER TRADE JOURNAL

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three different objectives sought . . .

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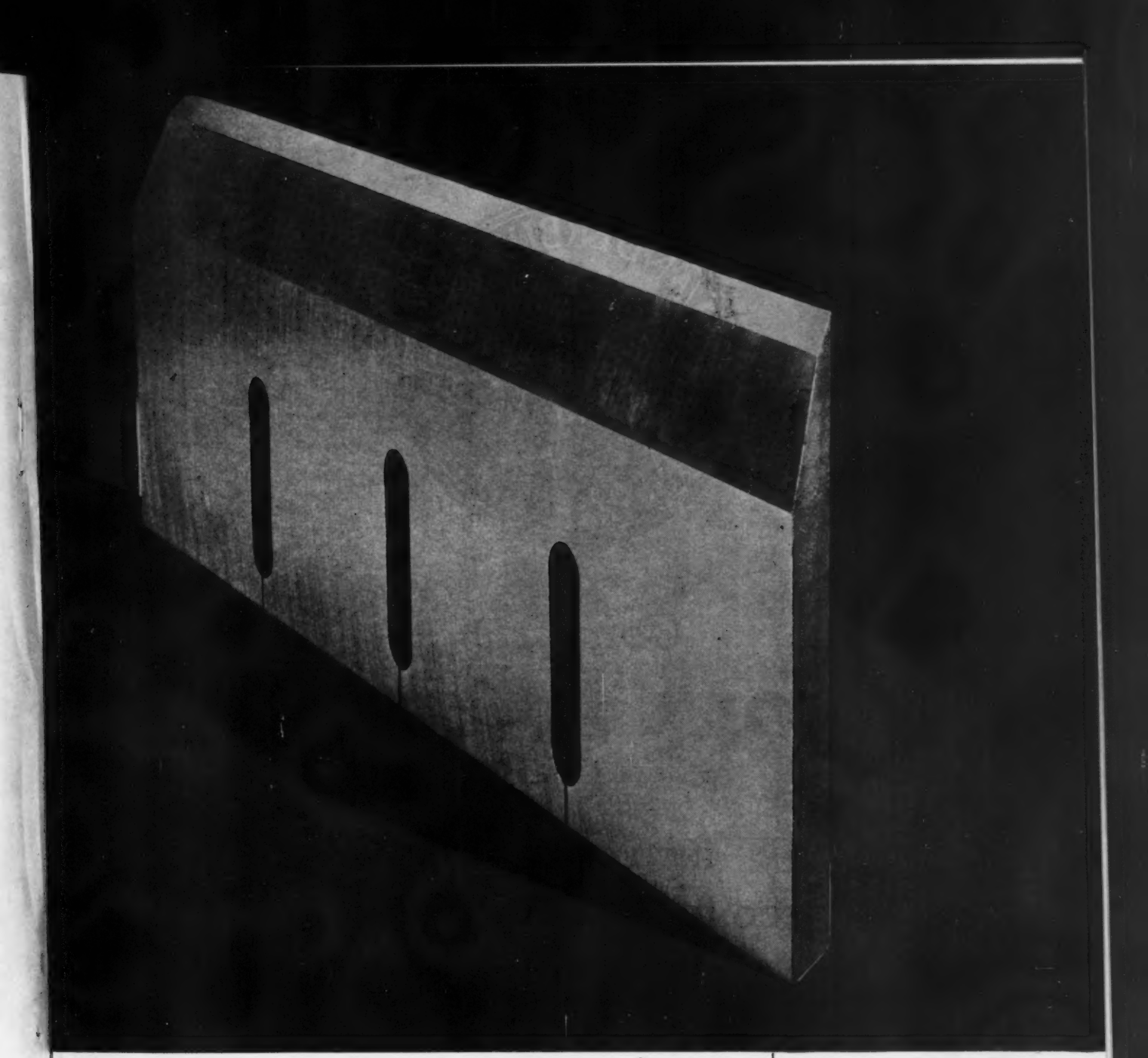

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Anyone who adds up the many advantages of using Heppenstall Chipper Knives—mills that keep close check on the cost of chipping logs—must reach one irrefutable answer . . . *Heppenstall E.I.S. Chipper Knives show a unit cost below any other brand on the market.*

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PAPER TRADE JOURNAL
Vol. 123, No. 6 August 8, 1946
Title Reg. U. S. Pat. Off.

State Department Praises T. B. McCabe

PHILADELPHIA — Thomas B. McCabe, president of Scott Paper Company, received high praise during the week from Acting Secretary of State Dean Acheson for "outstanding achievement in the rapid disposal of surplus property" in some eighty foreign countries and thirty island groups scattered all over the world. The occasion was a report in Congress on the progress of foreign surplus disposal.

Mr. McCabe has been serving as special assistant to the Secretary of State and as Foreign Liquidation Commissioner for the past fifteen months. Last week, he announced his determination to relinquish his duties to a successor within a month, returning thereafter to Chester.

The report to Congress shows that American property has been sold by the Foreign Liquidation Commissioner and his associates for more than a billion dollars.

"The rapid disposal of property which was often battle-worn, badly deteriorated and nearly inaccessible," commented Mr. Acheson, "under arrangements which call for the return of more than a billion dollars to the United States Treasury, is an outstanding achievement. The results obtained by the Foreign Liquidation Commissioner and his staff represent a real return for the American taxpayers, as well as furnishing a substantial contribution to the rehabilitation of a war-torn world."

Mr. McCabe, in an interview about his work, stressed the fact that he had been fortunate in securing outstanding businessmen to take assignments to foreign countries and conduct the actual negotiations and sales.

Thilmany Goes Two Months Without Lost Time Mishap

KAUKAUNA, Wis. — Thilmany Pulp and Paper Company has gone through two months without a lost-time accident in conjunction with the Safety Program being conducted at both the upper and lower mills. June was the final month of the National Safety Council 1945-46 contest and July opened the new program. L. S. Smith, personnel manager, said this was the first time in a number of years that there has been no accident reported during the month of July.

O.P.A. Authorizes Mark-ups To Meet Wholesale Costs

T. B. McCABE
His Liquidating Program Draws Praise

WASHINGTON—The Office of Price Administration on Monday authorized wholesalers of most paper and paper products to adjust their ceiling prices to maintain percentage discounts and mark-ups in effect March 31.

The action, effective August 5, was taken through amendment to Supplementary Order 156 and to Maximum Price Regulations 182 and 349. OPA promised to take similar action soon for retail prices. No drastic price increases on paper products used for trade and industrial purposes is to be expected by OPA as a result of today's action, taken to compensate wholesalers for price increases granted to manufacturers since the end of March.

An increase of 15 percent over current manufacturers' prices for all sizes of liquid tight paper containers was promulgated last week by the OPA. Effective July 30, 1946, the increase had been found necessary, OPA said, because of a tendency on the part of manufacturers to shift to other more profitable paper products, thus threatening a reduction in the supply of liquid tight containers.

Inasmuch as the containers are used almost exclusively for foodstuffs and as a substitute for still scarce metal containers, "their importance to the national economy during reconversion is great," the agency declared.

Manufacturers have been diverting their production, OPA explained, because rising costs in labor, materials and freight experienced since October 1941 have reduced the profit factor in most cases, and eliminated it entirely in a few.

Today's action will not raise the retail prices of ice cream, oysters, and other such food items which are packed in the containers, as those persons buying the containers from manufacturers are expected to absorb the additional cost, OPA said.

OPA pointed out that existing prices have been unchanged since they first were established, based on October 1-15, 1941, prices.

Arkell & Smith to Build Plant at Mobile, Ala.

CANAJOHARIE, N. Y. — Arkell & Smith, paper bag manufacturers, has selected Mobile, Ala., as the site for a new paper bag plant which will employ 200 workers. The company plans to utilize paper supplies purchased from the mills in the Mobile area. The firm now has plants in Canajoharie and Wellsburg, W. Va.

Invitation Conference On Hardwood Developments

SYRACUSE, N. Y. — Northeastern Wood Utilization Council in cooperation with the New York State College of Forestry will sponsor an Invitation Conference on new developments in hardwood pulp to be held October 2, 1946. Since the conference is planned as a discussion group, it is necessary to limit the number. Attendance will be by invitation, with special emphasis on the pulp mills in New England and New York. Text of the papers presented and a transcript of the discussion will be published in the Council's Bulletin series. For hotel accommodations, those attending should make reservations as far ahead as possible with the Hotel Onondaga, Syracuse. For further information, write the Northeastern Wood Utilization Council, P. O. Box 1577, New Haven 6, Connecticut.

Marathon Ups Kelly At Rothschild Plant

WAUSAU, Wis. — R. H. Kelly was named as resident manager of the Rothschild division of the Marathon Corporation July 27 by Roy J. Sunda, manufacturing vice - president. Mr. Kelly, who has been associated with the company for 34 years, will have charge of all pulp and paper manufacture at the Rothschild plant, operations which formerly were under direction of John Stevens, Jr., who has been named president of the Marathon mill in Canada.

He began his papermaking career in 1899 with the Falls Manufacturing Company at Oconto Falls. Between then and 1912, when he joined the Marathon Paper Mills Companv as a machine tender, he worked in several paper mills at various jobs.

Since he became associated with Marathon he has held a number of supervisory positions and has been general superintendent of the Rothschild division since 1942. Mr. Kelly served as national president of the Paper Mill Superintendents' Association in 1931 and 1932. He has taken a leading part in community life as president of the village of Rothschild, a position he now holds, and as a county supervisor.

Tomahawk Starts Shipments To National Container

LONG ISLAND CITY, N. Y.—The National Container Corporation, has begun to receive shipments of kraft board for use in manufacturing corrugated boxes from the newly acquired subsidiary Towahawk Kraft Paper Company. One of two machines owned by Tomahawk Kraft Paper has been converted to the manufacture of kraft board; the second machine is still manufacturing specialty kraft papers.

The additional supplies of board from the Tomahawk mill will immediately be reflected in increased sales of corrugated boxes by the existing converting plants operated by the parent corporation and subsidiaries.

St. Lawrence County Mills Offer TB Tests to Staff

OGDENSBURG, N. Y. — Employes of the Martin Pulp & Paper Company at Norwood and the St. Regis Paper Company at Norfolk are being offered an industrial X-ray survey program sponsored by the St. Lawrence County Tuberculosis Association. This program is paid for by the individual companies which offer it to their employes.

Southern Superintendents To Meet in Florida

JACKSONVILLE—American Pulp and Paper Mill Superintendents' Association, Southern and Southeastern Divisions, will hold annual meetings here November 14-16.

R. H. KELLY
Marathon Promotes Him

Eau Pleine Compromise Gets County Approval

WISCONSIN RAPIDS—A compromise proposal, apparently removing the last important obstacle to construction of the proposed $2,500,000 Little Eau Pleine reservoir, was approved July 30 by the Wood County Board of Supervisors. It calls for relocation of a section of County Trunk H in the twn of Milladore. The supervisors of Portage and Marathon counties previously had approved road changes necessitated by the project, which calls for creation of a lake 20 miles long and nine miles wide.

About two miles of road will be relocated one mile south of the present road, whereas the Consolidated Water Power and Paper Company originally had petitioned for relocation of about five miles. This petition was rejected by the board in July. George W. Mead, president of Consolidated and of the Wisconsin Valley Improvement Company, Wausau, then announced that the project must be abandoned. The compromise plan was worked out shortly afterward by the board's highway committee, company representatives and farmers whose land would be affected by the flowage.

Metropolitan Dealers to Golf At Bethpage August 15

NEW YORK—The Metropolitan Bag & Paper Distributors Association will hold its 29th annual outing and golf tournament on Thursday, August 15, at Bethpage State Park, Farmingdale, where the green course has been reserved for this affair. This function is generally attended by over two hundred paper merchants, manufacturers, converters and others affiliated with the paper industry.

A buffet luncheon and shore dinner will be served and many prizes awarded to lucky winners.

OPA Allows Raise In Greaseproof

WASHINGTON, D. C. — Manufacturers' ceiling prices for glassine and greaseproof papers have been increased 50 cents per hundred pounds, by the Office of Price Administration. Higher labor and material costs have necessitated the increase, which became effective August 2, 1946.

Glassine and greaseproof papers are used almost wholly in the packaging of food products. Manufacturers sell directly to food processing firms or to paper converters who convert the papers into bags and wrappers and sell them to food processors. The converting manufacturers or the food processors will absorb tday's increase as the ceiling prices for their products are not changed.

OPA said that this action will mean an added return to glassine and greaseproof paper manufacturers of $1,000,000 a year, as the annual output of these papers approximates 100,000 tons. A study had shown that most manufacturers of these papers were producing at a loss since recent increases in labor and material costs.

Jennings Explains Thilmany Long Range Plan

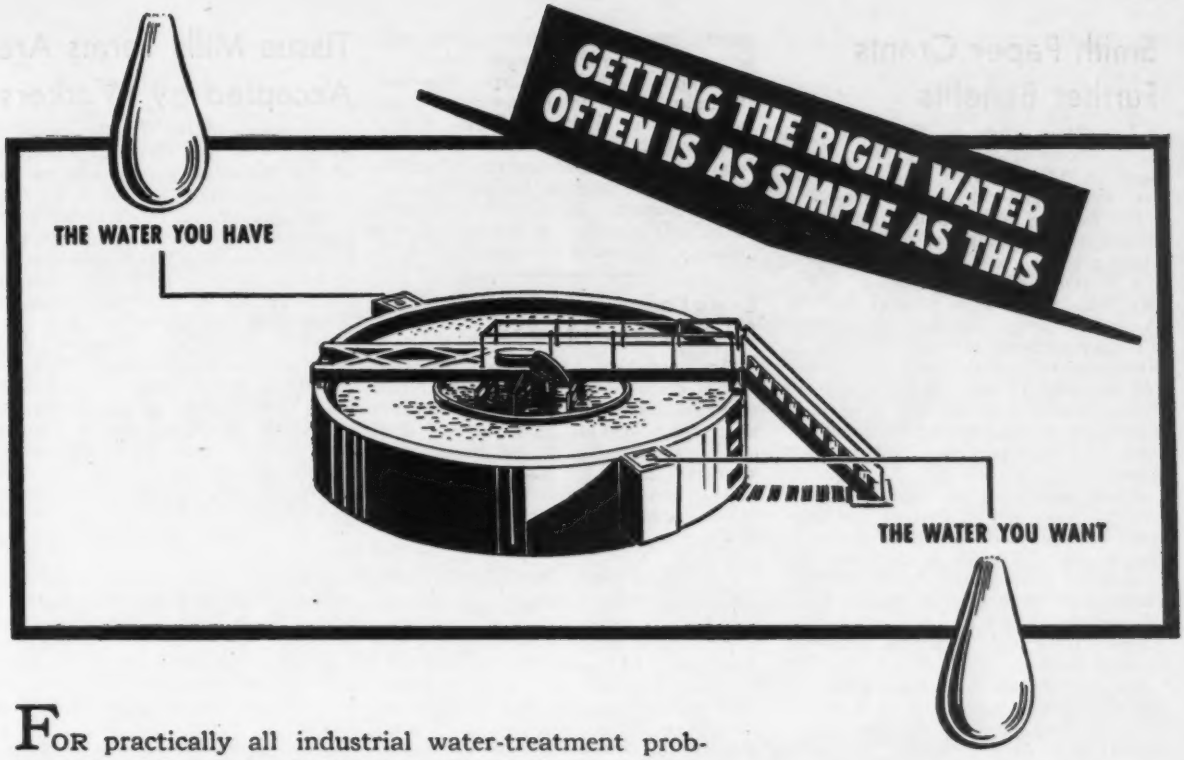
KAUKAUNA, Wis.—"Current Conditions Governing Thilmany's Long Range Plan" was the title of an article by E. H. Jennings, vice-president and sales manager of the Thilmany Pulp and Paper Company, in the July issue of Thilco News, mill paper.

He said that 1947 should see the installation of a new machine which will make papers the mill is not now in position to manufacture, and that the mill probably will add one more paper machine to replace an older one for the manufacture of glassine and greaseproof papers. He added, however, that plans are indefinite as to the latter, because costs have increased and the stability of products' prices remains in doubt. He indicated the possibility that a delay of several years may become necessary.

"In addition to new paper machines, there also have been certain changes in the converting facilities, all of which mean a greater diversification of the mill's converted products," he wrote.

Kimberly Names Delegates To Foremen's Convention

KIMBERLY, Wis. — Delegates to the convention of the National Association of Foremen, to be held September 13, 14 and 15 in St. Louis, were named at a special meeting recently of the Kimberly Foreman's Club preceding a dinner at the Kimberly Clubhouse. The delegates are C. J. Bouressa, president; William J. McDonald, John B. Clark and Carl Krenkel. Harold G. Fird is the alternate.



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Regardless of the treatment required—turbidity, color or hardness removal—there is a Dorr machine, plus a Dorr method, for producing a tailor-made process water to meet your most rigid specifications.

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The Dorrco Clariflocculator is but one of several Dorr units—lime and alum dosing but one of many methods—for industrial water treatment.

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The Dorrco D-I System gives you the chemical equivalent of distilled water for a few cents per 1000 gallons.

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Smith Paper Grants Further Benefits

LEE, Mass., Aug. 1—Walter F. Tatum, vice-president and general manager of Smith Paper, Inc., disclosed last week a general wage increase and other benefits to all hourly-rated employes of the company, following the signing today of a new contract with the International Brotherhood of Paper Makers, Berkshire Local No. 78. A general wage increase of 13 cents an hour became effective August 5. Furthermore, a plan has been worked out whereby all tour workers will receive premium pay for tour work with some employes receiving four and six cents and some receiving two and four cents.

Three additional paid holidays were granted and overtime of time and one-half will be paid for the sixth consecutive day of work in the Monday-Saturday work week with certain credit days, such as New Year's Day, Memorial Day, 4th of July, Labor Day, Thanksgiving and Christmas counting as days worked.

The general wage increase given at this time makes a total of 18 cents an hour increase since V-J day. By granting of shift differentials of two and four and four and six cents an hour, it brings all tour workers in the mill to an equal basis of prevailing shift differentials paid in the paper industry.

The granting of the three additional holidays makes Smith Paper Inc., the first paper mill in this area to grant its employes six paid holidays, Tatum said. There are several other changes in the contract agreed upon which will help to maintain the cooperative spirit that has prevailed in these mills.

The company was represented in the negotiations by Tatum, C. J. Donahoe, P. W. Ayers, E. A. Richardson, R. E. Treasure, H. M. Keating and E. G. Pease.

The union was represented by James Clifford, Thomas McGinty, John Ford, Lincoln Streeter, Kenneth Brazee, John Tormey, Rupert Tarmey, Edward Dempsey and Mrs. Mary B. Carty.

Smith Paper Employes Plan Labor Day Festivities

LEE, Mass.—The Spinic Athletic Association of the Smith Paper Inc., will hold its third annual Labor Day celebration September 2. Each year the association strives to put on a better all-day celebration than the previous year and this one will be no exception.

There will be an old-fashioned fireman's muster with several different companies competing for prizes in their special events. Another feature of the all-day celebration will be field events for men, women and children, consisting of races, jumping, tug-of-war, softball games and numerous other events.

In the evening there will be a band concert and a block dance will wind up the celebration. Refreshments will be available throughout the day.

Committee chairmen are: General chairman, William Powers; refreshments, Paul Peiffer, John Kelly, Thomas Carty; music and block dance, John Cooney; field events, Patrick Tolvo, Samuel Martin, Joseph Whalen; firemen's muster, Hubert Orienti, Lee fire chief; parade, William Powers; publicity, Raymond Connors.

Eagle Lodge and Local 226 Discuss Possible Merger

HOLYOKE, Mass.—As a result of prolonged discussion concerning the relative benefits in consolidation, there is a strong possibility that Eagle lodge of Papermakers, No. 1, and Paper Mill Workers' union, local 226, may merge in the immediate future. Edward M. Moore, organizer for the International Brotherhood of Papermakers disclosed today.

Five major points originally brought the merger under consideration, Moore said. According to the organizer, officials of both locals were prompted to join forces (1) since they work hand in hand; (2) they are under a joint labor agreement; (3) they establish a joint negotiating committee in the execution of contracts with manufacturers; (4) they have always evinced mutual support in controversies over agreements; (5) a merger apparently is a sound method of eliminating jurisdictional disputes over various jobs in the mills.

O. F. Hutchinson Rejoins B-D

NEW YORK — O. F. Hutchinson has rejoined the specialty products department of Bulkley, Dunton Pulp Company as sales and service representative for Sveen-Pederson Flotation Saveall. "Hutch," as his many friends in the industry know him, was released from the Army a short time ago, after 26 months service with the combat engineers. Before his military service, he spent six years with Bulkley, Dunton as chemical engineer of the specialty products department. Prior to that, he was chemist for the Monroe Paper Corporation of Lawrence, Mass., and from 1930 to 1935 he was research chemist with Brown Company in Berlin, N. H. He was graduated from Shrivenham American University of Shrivenham, England, where he studied general chemistry and industrial management.

Ahdawagam Reelects Directors

WISCONSIN RAPIDS, Wis.—Five directors of the Ahdawagam Paper Products Company were reelected July 24 at the annual stockholders' meeting. They are George W. Mead, Walter L. Mead, Ralph R. Cole, C. K. Crouse and Frank R. Walsh. At the subsequent directors' meeting, George W. Mead was elected president; Mr. Walsh, vice-president; Mr. Crouse, secretary, and Mr. Cole, treasurer.

Tissue Mills Terms Are Accepted by Workers

HOLYOKE, Mass.—Employes of the Stony Brook and Pearl City divisions of the American Tissue mills meeting in special session last week at Eagle Lodge auditorium, voted to accept the management's final counterproposal there by canceling previously-arranged strike measures and amicably concluding negotiations which have been in effect since May.

Edward M. Moore, organizer for the International Brotherhood of Papermakers in which union tissue workers hold membership, disclosed that the vote taken was in acceptance of a nine-cent an hour increase as against the 10 cents initially demanded. The figure was given as an ultimate concession on the part of the manufacturers, who first counter-offered a five-cent hourly hike in wages.

In addition to the pay clause, the assembly also indicated acceptance of time and one-half for Saturday work, two hours call time, and six holidays with pay. The wage increase, Moore said, will be retroactive to May 1. The new contract will be signed during the week.

Decision to accept the company's offer climaxes three months of vigorous debate over an agreement, during which labor threatened a walkout over the management's "reluctance to countenance their demands" and the latter claimed "misrepresentation of facts in releasing information to public consumption." The favorable vote taken by union men brings to a close all disputes and work was resumed as usual today.

Powell River Buys New Giant Carriers

POWELL RIVER, B. C.—Delivery of two giant carriers has been made to the Powell River Company. The new carriers have a capacity of 14,000 pounds with a ten foot over-all width and an over-all length in excess of 13 feet. The two carriers are being used to speed up the movement of heavy rolls of newsprint from the finishing room to warehouse at the dock. Similar to the standard Gerlinger carriers, the new Giant model is the largest ever brought into Canada. It will pick up six 1,800-pound newsprint rolls at one time in a fraction of a minute, carry them any desired distance and put them down with equal dispatch. Loads ranging from 30 to 90 inches in height can be clamped inside the machine and carried with safety and security on grades.

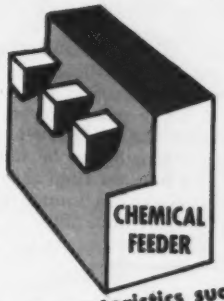
It conveys some conception of the size of the new carriers when it is realized that the height of the top, when up, is just over 14 feet above the ground and that the driver's head is just about 13½ feet above ground level. They are powered by Ford V-8 truck motors.

SIMPLICITY OF HANDLING... SAFETY IN APPLICATION... STABILITY IN STORAGE...

...That's BECCO HYDROGEN PEROXIDE

By far the most important use of hydrogen peroxide is its application as a bleaching agent. Commercial hydrogen peroxide solutions simply diluted with water to a suitable concentration, bleach almost any organic material.

FOR MOST ECONOMICAL USE special groundwood bleaching methods have been developed by BECCO. The amounts of hydrogen peroxide needed for bleaching are small, but the results obtained are outstanding. Some of these are:



1. Substantially no loss in weight.
2. Retention of groundwood's desirable characteristics such as bulk, absorbency, strengths, and formation on the machine.
3. High brightness increases.

Now is the time to investigate the use of Becco Hydrogen Peroxide for groundwood pulp bleaching. Write to:

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BECCO SALES CORPORATION

AGENTS FOR BUFFALO ELECTRO-CHEMICAL CO., INC.

18 Sawyer Avenue, Buffalo 7, N. Y.

New York Boston Philadelphia Chicago Charlotte

Hudson Valley Hums In Paper Industry

COHOES, N. Y. — Postwar activities prevail in many of the large paper mills of this district and it is freely predicted that good times are ahead for the industry. Expansion plans are under way by a number of firms which will allow greatly increased production.

Plans of the Sandy Hill Iron & Brass Works, Hudson Falls, call for production in a new addition, 100 by 30 feet, adjoining the main plant, and a structure recently acquired is to be remodeled to house the enlarged engineering force. The firm recently leased a warehouse from the Union Bag and Paper Company and plans improvements to its present storehouse for the storage of canceled government material.

All departments of the Union Bag and Paper Company, particularly the specialty divisions, are maintaining full production and new help is now being sought for some departments. Other mills searching for workers during the week included the Albia Box and Paper Company, Warrensburg Pulp and Paper Corporation, Schuylerville Wallpaper Company and the International Paper Company. Extensive improvements are under way at the mills of Finch, Pruya & Co., Glens Falls, which will permit increased production.

Employes of F. C. Huyck and Sons will receive a retirement allowance in addition to Social Security benefits when they leave the firm at 65 years, in accordance with the company pension plan. Employes will not be obligated to create the pension fund as the firm has already provided a foundation and will make annual donations to a trust fund.

Strathmore's Spars Return to Posts

SPRINGFIELD, Mass.—Two local girls, former SPARS, have returned to their positions at the Strathmore Paper Company, West Springfield. Margaret Aspinall of Westfield and Emma Ricci of North Agawam, both alumnae of Bay Path Secretarial school of this city, had extensive duty with the United States coast guard.

Miss Ricci entered service in, 1943 with her sister, now Mrs. Thomas Colli, of Hartford, and served with her on similar assignments all through her service career. She is the daughter of Mr. and Mrs. Patsy Ricci of North Agawam.

Miss Aspinall, daughter of Mr. and Mrs. John A. Aspinall of Westfield, also entered service in 1943 and following a course at storekeeper's school at Palm Beach, Florida, was assigned to duty in Washington, D. C. While serving in the personnel office there, she was also a member of the SPARS drum and bugle corps, SPARS sextet, and acted as chaplain's assistant.

Collins Places Insurance On Entire Plant Staff

NORTH WILBRAHAM, Mass.—All employes of the Collins Manufacturing Company will have the protection of group insurance coverage for life, sickness and accident. Negotiations underway for the past few weeks by a committee representing the management and the union on matters relative to the plan, were completed last week with representatives of the Aetna Life Insurance Company which was selected to handle the coverage by vote of the committee.

The cost of the insurance will be borne on an equal basis by the management and the union, the announcement stated.

Smith Paper Storage Plant Approved by CPA

LEE, Mass., Aug. 3—Largest project in Western Massachusetts to win Civilian Production Administration approval in the past two months is a new storage plant planned by the Smith Paper Co. The plant, which will be constructed without use of materials needed in the veterans' housing program, will be used for the storage of baled flax fiber used in the manufacture of paper. Company officials indicated construction work on the project would be begun shortly.

Appleton Stages Games For All Present

APPLETON, Wis. — Games, contests, tournaments and a softball game were featured at the annual employes picnic of the Appleton Coated Paper Company Sunday, August 4, at Telulah park. There was a ping pong tournament for boys and girls 12 years old and over, and bean bags for younger boys and girls.

Ontario Plans New Building

THOROLD, Ont.—Ontario Paper Co. has started construction on a $500,000 general office building. The project is expected to provide employment for many men for several months. Besides the company offices the building will contain extensive facilities for mill employees, including dining rooms, infirmary, locker rooms and showers, and a recreation room. The present time office will be torn down to make way for the new building. Allward & Guinlock, Toronto, are the architects. The contract for the construction has been let to the Foundation Co. of Ontario, Toronto.

Marathon Picnic Draws 3500

MENASHA, Wis.—More than 3,500 persons attended the annual picnic of Marathon Corporation for its employes and their families at Smith park on July 27. It was the first picnic of the company since 1941, and was dedicated to the 575 of the company who were in the service.

Annexation To Shift NEPCO Forest Lands

WISCONSIN RAPIDS—Discussion has been in progress for several months concerning the possible annexation of the Two Mile school district in the town of Grand Rapids to the city of Wisconsin Rapids. Major properties of the Nekoosa-Edwards Paper Company are located in the town.

Last week notices were posted, admittedly at the company's behest, that a petition would be circulated for annexation of Nepco properties in the town to the village of Port Edwards.

Nepco lake, 2,000 acres of reforested land and the east abutments of Centralia and Port Edwards dams, representing about 32 percent of the district's assessed valuation, are included in the properties. Annexation of these holdings would strip the Two Mile district and the town of Grand Rapids of a major source of revenue, the company paying a tax of $13,114.92 last year.

A Nepco spokesman pointed out that only properties owned by the firm are included in the proposed annexation and that all are directly related to the production of paper at the Port Edwards and Nekoosa mills, with exception of some privately-owned lake property. The Wisconsin River flows between the area proposed for annexation and the village. Construction of a bridge by Port Edwards in that region is said to have been under consideration for many years.

Fire Destroys Waste Stock At Wisconsin Rapids

WISCONSIN RAPIDS, Wis. — A fire which burned or smoldered the greater part of the week broke out July 22 in the main scrap paper storage pile of the Consolidated Water Power and Paper Company. Situated north of the mill along the railroad tracks, the pile was about 25 feet high and contained about 700 tons of scrap paper imported from collection centers in baled form at about $18 per ton. Origin of the blaze was not known. Bales which were not burned were so badly charred and water-soaked as to be useless.

Canadian Bemis Adds To Vancouver Plant

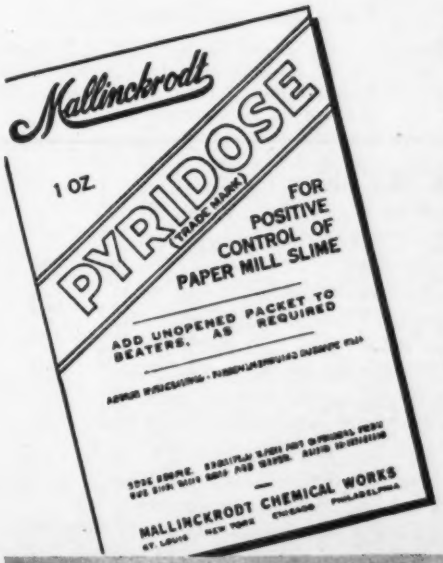
VANCOUVER, B. C.—Canadian Bemis Bag Company is planning erection of a $53,000 addition to its plant at 900 Parker street. Dominion Construction Company, Vancouver, has been awarded the contract and application has been made for a building permit. The building will be of fireproof construction and will be used for plant and storage extension purposes. The Canadian Bemis Bag Co. is also planning expenditure of $100,000 on additional equipment for its plant.

NEW POSITIVE CONTROL OF PAPER MILL SLIME

ONE OUNCE OF
PYRIDOSE
TO TEN TONS OF PULP

PYRIDOSE* economically and positively controls slime... one ounce of Pyridose treats ten to fifteen tons (dry weight) of pulp.

Pyridose is a potent fungicide and bactericide—proved by thorough tests. It is unusual because of its great water-solubility, *140 times* greater than other comparable agents. Pyridose goes to work immediately!



For convenient application, one full ounce of Pyridose comes in a handy, economical paper packet to be thrown unopened into the beaters or refiners. This avoids handling bulk chemicals... no mess or waste with Pyridose.

More information from your nearest Mallinckrodt office today!

*PYRIDOSE is the Mallinckrodt trade-mark for Pyridylmercuric Acetate in paper packets for positive control of paper mill slime.

MALLINCKRODT CHEMICAL WORKS
79 Years of Service — *to Chemical Users*
FINE CHEMICALS Mallinckrodt SINCE 1867
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CHICAGO • PHILADELPHIA • LOS ANGELES • MONTREAL
UNIFORM • DEPENDABLE • PURITY

Norwood Creditors Seek Receiver

NORTHAMPTON, Mass., Aug. 1—Edward Krock of Worcester, co-owner of the Norwood Manufacturing Engineering company, said today that an involuntary bankruptcy petition filed in federal district court at Boston on behalf of three creditors of the concern, had been filed in connection with the Florence concern's predecessor, the Norwood Engineering company.

Asking that evident confusion be cleared up today, Krock explained that any bankruptcy proceeding started in Boston on behalf of Bagley and Sewall of Watertown, N. Y., Westinghouse Electric company at East Pittsburgh, Pa., and J. Russell and Company of Holyoke, were directed against the predecessor company and having nothing to do with the Norwood Manufacturing Engineering company which he now heads with his brother, Aaron Krock. The Krocks purchased Norwood Engineering company recently at an assignee's sale.

Krock added that he has assumed personal responsibility for the new concern and that all its creditors are being paid in full. Sale of the foundry, whose employes have secured jobs elsewhere, is nearly ready for a formal announcement, he added.

Meanwhile it was learned that the basis of the bankruptcy petition brought against the Norwood Engineering company has to do with the assignment for the benefit of creditors which was made in May prior to the sale. J. Russell and company's claim amount to $422.89, Westinghouse $1,-416.28 and Bagley, Sewall $2,025.

Action on the bankruptcy petition is expected within the coming week, with the petitioners expected to seek appointment of a receiver and rescinding of action taken at the assignee's sale at which the concern was sold to the Worcester men.

Acting as administrator for the estate of G. Wilson MacDow and as attorney for the Associated Manufacturing Co., Inc., Atty. Wilfred H. Smart of Boston stated on Monday that he sold the controlling interest in the Norwood Engineering Company, with the implied understanding that the new owners would pay the creditors of the concern and keep it operating as a going concern.

The Boston lawyer stated that he negotiated for the sale of the stock with Aaron and Edward Krock of Worcester, and their lawyer, Atty. Sol Seder. He added that the stock certificates were made out in blank, however, and were delivered to someone from Seder's office.

Smart said he negotiated for the sale of the stock in a lump for four months and that he sold it because the negotiators "inferred" that the creditors would be paid and the industry maintained.

The Associated Manufacturing Company, he said, was the holding company for Norwood Engineering, and the stock held by the corporation, plus that held by the estate of MacDow, was almost all the stock. Smart said the sale was "really a forced sale," since it would have been forced into bankruptcy had the stock been held.

Strathmore Curbs Its Lines

WEST SPRINGFIELD, Mass. — Strathmore Paper Company has slashed the number of its lines to below 50 percent of the prewar total. The move was reported to be a result of a "postwar planning" program carried on during World War II. At the present time, Strathmore manufactures approximately 80 percent of the projected items of its postwar line.

Great Lakes Profit More Than Doubled

TORONTO — Great Lakes Paper Co., for the first six months of the current year reports an operating profit of more than twice the 1945 figure and a net profit of $488,628—3.8 times the comparable 1945 figure of $123,320. If the net profit is doubled, to bring it to an annual basis, it would indicate earnings of $5.34 a class A share and $2.84 a common share — substantially above the $1.61 and deficit of $0.97 a share respectively reported for 1945. But doubling these figures cannot be justified, due to changing conditions, a company official reports. Wages were increased in May and U. S. freight rates have gone up. Another increase in the price of newsprint would also change the results. Earnings, however, are expected to better $750,000 under present conditions. This would indicate at least $4.40 a class A share and $1.90 a common share for 1946.

The main reason for the better results are the higher rate of operations this year and the higher price for newsprint in effect since Jan. 1, 1946, and for surplus sulphite pulp since April 22, 1946. At present the mills are operating at 100 percent of both newsprint and sulphite capacity, as against an average of 78 percent newsprint and 89 percent sulphite capacities in 1945. The standard profit base has been settled at a figure which the company considers fair. Refunding arrangements are nearly completed and an announcement is expected soon.

Eddy Declares Dividend

Eddy Paper Corporation, at a meeting of its Board of Directors held in Chicago, has declared a dividend of $5 a share on its common stock.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending August 3, 1946

STOCKS

	High	Low	Last
A. P. W.	8	7¾	8
Armstrong Cork Co.	57	56	57
Celotex Corp.	33¾	31⅝	33¼
Celotex Corp., pf.	22	21½	21½
Certain-Teed Products Corp.	24¼	22⅞	23¾
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	56	53	56
Champion Paper & Fibre Co., pf.	112	111½	112
Congoleum Nairn Co.	34¼	33	34¼
Container Corp. of America	47¼	44⅜	47
Continental-Diamond Fibre Co.	13½	13	13½
Crown-Zellerbach Co.	34¾	33¾	34¾
Crown-Zellerbach Co., pf.	129½	129½	129½
Dixie Cup Co.	45	41¾	45
Dixie Cup Co.—A	57	53½	57
Flintkote Co.	39	36¾	38¾
Flintkote Co., pf.	114	114	114
Robert Gair	10½	9⅝	10⅜
Robert Gair, pf.	20⅜	20⅛	20¼
International Paper Co.	47⅞	46¼	47¾
International Paper Co., pf.	120	117	119¾
Johns-Manville Corp.	140	136¼	139¼
Johns-Manville Corp., pf.	128¼	122¾	128¼
Kimberly-Clark Corp.	63½	63½	63½
Mac Andrews & Forbes	40¾	40½	40¾
Mac Andrews & Forbes, pf.	....	....	....
Masonite Corp.	67¼	64	67¼
Mead Corp.	27	26	26⅛
Mead Corp., pf. A-6%	....	....	....
Mead Corp., pf. B-5½%	....	....	....
National Container Corp.	33	31½	32⅛
Paraffine Companies, Inc.	80	80	80
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	27	26	26¾
Rayonier, Inc., pf.	38⅛	37¾	38
Ruberoid Co.	55	54½	55½
Scott Paper Co.	57	56⅛	56⅝
Scott Paper Co., pf.	108	108	108
Sutherland Paper Co.	45¾	44¾	45⅛
Union Bag & Paper Corp.	37¾	35½	37
United Paperboard Co.	13⅜	13¼	13⅜
U. S. Gypsum Co.	121½	111	121½
U. S. Gypsum Co., pf.	203½	202	202
West Virginia Pulp & Paper Co.	46	42½	46
West Virginia Pulp & Paper Co., pf.	112½	111¾	111¾

BONDS

Abitibi Pulp & Paper Co. 5s '53	....	....	....
Celotex Corp. 3¼s '60	105½	105½	105½
Certain-Teed Products Corp. 5½s '55	....	....	....
Champion Paper & Fibre Co. 3s '65	....	....	....
International Paper Co. 5s '47	101 1/16	101 1/16	101 1/16
Mead Corp. 3½s '53	....	....	....

New York Curb Exchange

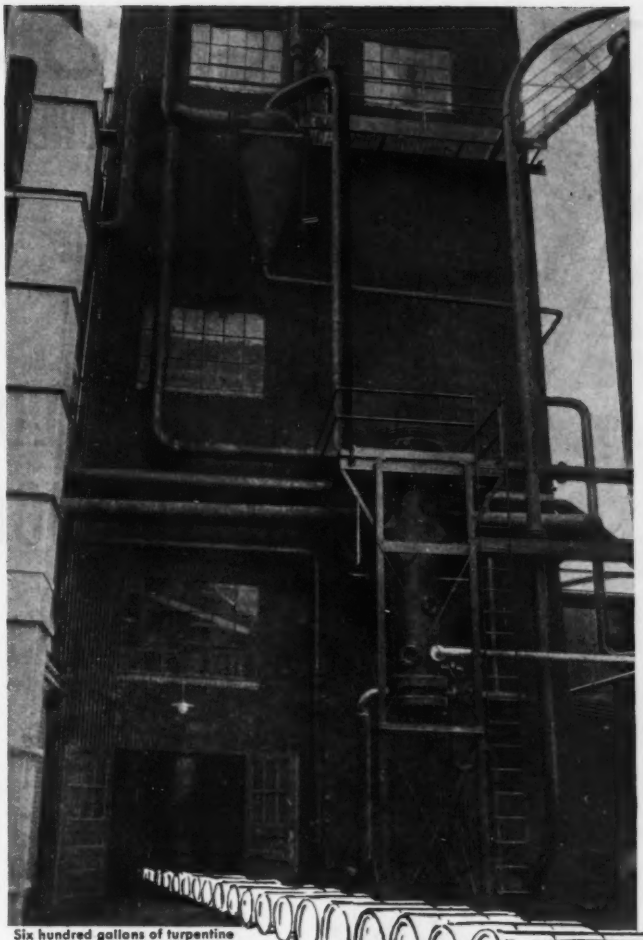
High, Low and Last for Week Ending August 3, 1946

STOCKS

	High	Low	Last
Great Northern Paper Co.	43	40	43
Hummel-Ross Fibre Corp.	16½	14⅞	16½
St. Regis Paper Co.	13¼	12⅝	13⅛
Taggart Corp.	10	9¾	9¾

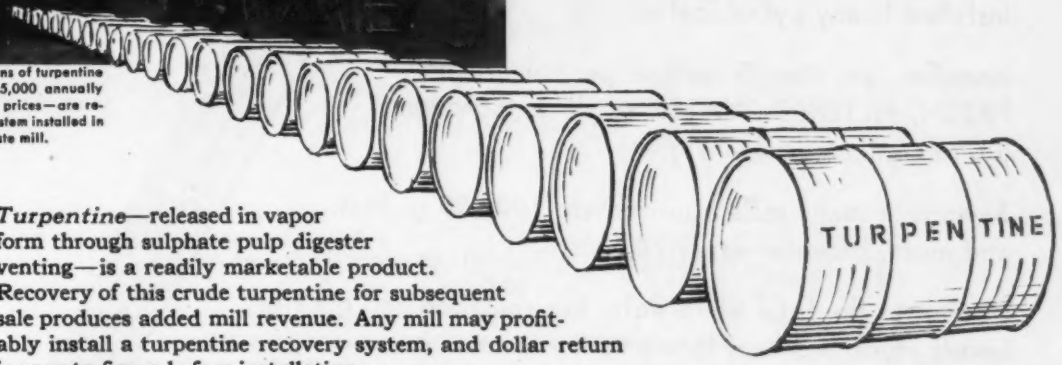
BONDS

American Writing Paper Co. 6s '61	....	....	....



Six hundred gallons of turpentine daily — worth $45,000 annually at present market prices — are recovered by this system installed in a Southern sulphate mill.

Profits from TURPENTINE RECOVERY



Turpentine—released in vapor form through sulphate pulp digester venting—is a readily marketable product. Recovery of this crude turpentine for subsequent sale produces added mill revenue. Any mill may profitably install a turpentine recovery system, and dollar return is easy to figure before installation.

The Foster Wheeler system recovers approximately 4 gallons of turpentine per ton of pulp produced. Therefore, a 100-ton mill would recover 400 gallons daily . . . 120,000 gallons in a 300-day year. At the current market price of 25c per gallon, $30,000 would be gross income from the system for 300 days' operation. The economics are simple—added revenue *plus* a dividend in the form of fuel saved through heat recovery in the turpentine condenser.

The FW system consists of three essential elements—a cyclone separator, turpentine condenser and gravity separator where water is removed. Heat absorbed by circulating water in the condenser may be used elsewhere in the mill.

For information about this—and other modern economic processing systems for the paper industry—address

FOSTER WHEELER CORPORATION • 165 Broadway, New York 6, N. Y.

FOSTER WHEELER

The BROUGHTON

S-13-H OSCILLATING SHOWER

for

Cylindrical Screens

equipped with

NEW HYDRAULIC OSCILLATION

The same water drives the oscillator that passes through the shower. No grease or oil. Everything water lubricated. Compact and easily installed in any cylindrical screen.

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Also Manufacturers of S-10-H Showers for cleaning cylinder moulds, felts, Fourdriniers, etc.

Requires less than 5 gallons per minute of FRESH, FILTERED WATER to do a thorough job of continuous cleaning.

Savings in many mills approximate 100,000 gallons, and more, of water every 24 hours.

Bulletin upon request.

Decreases the total white water in circulation and greatly lowers stock and heat losses to the sewer.

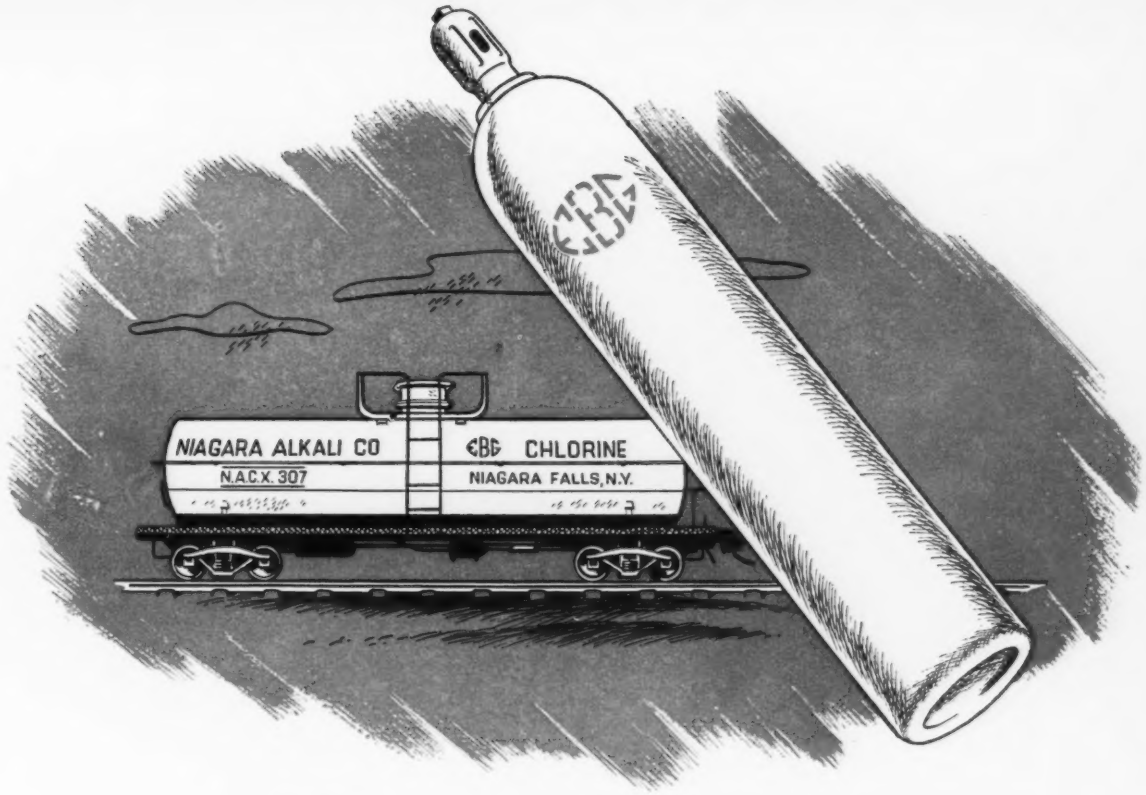
Completely eliminates the use of all pans inside and outside the screens.

REDUCES ADULTERATION OF STOCK INSIDE SCREEN.

A. E. BROUGHTON & COMPANY

Manufacturers of Oscillating Showers, and Unit Vacuum Controls for paper machine suction boxes.

GLENS FALLS, N. Y.



The importance

OF BEING NIAGARA EBG LIQUID CHLORINE

LIQUID CHLORINE continues to increase in importance not only as an agent for the purification of water and the bleaching of textiles, paper and other products but also as a convenient chemical "tool" for the development of new and useful organic compounds.

As the first American producer of this chemical and a pioneer in electrochemical product development, Niagara's service in Liquid Chlorine is backed by advanced knowledge and experience that can be of continuous value to you in obtaining the best results from its use.

A new 48-page booklet giving essential data on the uses, characteristics, physical properties and handling of Niagara EBG Liquid Chlorine is available on request. Niagara Alkali Company, 60 East 42 Street, New York 17, N. Y.

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Dicalite Names Two To District Posts

A. G. Frankenhoff, vice-president and sales manager of the Dicalite Company, effective July 1, 1946, has named A. L. Trumpler and J. T. Brady to be district engineers of the company's Buffalo and Pittsburgh offices respectively.

Mr. Trumpler, formerly a lieutenant in the U. S. Navy with 40 months of service, joined the Dicalite organization in December, 1945, as a sales engineer in the Philadelphia office. He is a Lehigh University graduate mechanical engineer, and before entering the service had worked as design engineer for the Timken Roller Bearing Company, Canton, Ohio.

J. T. Brady entered the U. S. Marine Corps following his graduation in 1942 from Toronto University.

Brown Hits Record Output For Second Successive Month

PHILADELPHIA—For the second successive month Brown Instrument Company reported a new production record. The average daily output of this industrial division of Minneapolis-Honeywell Regulator Company during June exceeded all other average daily totals for any previous month in over 80 years of company history, according to L. Morton Morley, vice president and general sales manager.

Further evidence of growth and planned expansion was also made known in the Brown company announcement that it has doubled the capacity of its electrical power and lighting system.

Downingtown Gets Contract For Gypsum Plant Equipment

DOWNINGTOWN, Pa.—The Downingtown Manufacturing Company has contracted to build for the United States Gypsum Company two large combination paper machines and furnish all of the stock preparation equipment for two combination felt and paper mills.

It was devided to build one mill on the Pacific coast and one mill on the East coast. The stock preparation system design and layout is being made by Polleys and Baxter, Consulting Engineers of Middletown, Ohio.

Appleton Wire Works Shuts for Vacation

APPLETON, Wis. — Appleton Wire Works' 230 employes went on their annual vacation during the week beginning August 4. The maintenance crew will stay on the job to make necessary repairs while the plant is down.

Employes with five years or more of service with the company are paid for two weeks, although they are off only a week. Those with less than five years are paid for the week.

New PLASTIC COATING STOPS CORROSION ...Cuts Maintenance Costs

NOT A PAINT BUT A CHEMICALLY RESISTANT LIQUID PLASTIC

•

AS EASY TO USE AS ANY PAINT

•

WILL NOT CHECK, CRAZE OR CRACK

•

FOR METAL, WOOD, CONCRETE AND BRICK

Neolac is a new type of maintenance coating . . . . made from a combination of chemically inert, thermoplastic and thermosetting resins . . . liquefied by the use of special high-boiling-point solvents. Neolac is applied like any paint, by spray gun or brush. When the solvents evaporate (Neolac dries within a few minutes) a tough, sturdy, corrosion-resistant plastic film is formed. This tight, non-oxidizing plastic "skin" resists acids, alkalies, alcohols, water, fumes and weather — provides longer "sure-fire" protection for your plant and equipment.

★ LOW ORIGINAL COST

★ GALLON COVERS 450 SQ. FEET

★ NO PRIMER NEEDED . . 2 COATS AMPLE

★ LEAVES NO SKIN IN CAN . . . NO WASTE

★ EXTREMELY LOW PERMEABILITY

★ RESISTS HEAT UP TO 265° F

SPECIAL Introductory Offer for Comparative Test Purposes

One quart of either Neolac Black, Gray, Green, Clear or Aluminum, plus one pint of Neolac Thinner, $2.80 prepaid anywhere in the U.S.A.

CHAMBERLAIN ENGINEERING CORPORATION

5000 BRIMFIELD RD., AKRON 9, OHIO

Australian Imports Gaining; New Zealand Output Rises

PERTH, W. A.—Imports of newsprint in rolls and sheets for the year ended January 1946, totalled 91,516 tons, valued at $7,662,163. January imports totalled 13,330 tons, and February showed an increase with a total of 13,803 tons. This was a great improvement on the previous February, when the total newsprint landed was only 2,817 tons.

Details of this February's imports are as follows: Rolls, not less than 10 inches in width, 12,181 tons (Canada, 9,358; Newfoundland, 2,823; and a small amount—weight not specified—from the U.S.A., value only $62.40); sheets, not less than 25 inches by 20 inches or equivalent, 1,622 tons (United Kingdom, 1; Canada, 1,460; Newfoundland, 155; U.S.A., 6).

Imports of other papers were small, being as follows: Imitation art, 19 tons (U.K., 11; U.S.A., 8); Coated printing, 3 tons (U.K., 1; Canada, 2); Glazed imitation parchment, no weights given (U.S.A., value $24); Lithographic, machine glazed, 2 tons (all from U.S.A.); other printing papers, 88 tons (U.K., 12; Canada, 64; U.S.A., 12).

Value of imports of all papers for the year 1944-45 was $21,830,400, against the previous year's $16,948,800.

The New Zealand Government Statistician reports that the gross value of paper manufacturers in that Dominion has shown a steady increase. In 1938 the value was $3,126,922; in 1939 it was $3,139,266; in 1940 it had jumped to $4,666,963; in 1941 it was $7,438,834; and by 1942 it was $8,614,238.

Australian newspapers are stated to have urged upon the Federal Government the expansion of the newsprint industry in Tasmania to a level which will provide for minimum requirements in the event of any international crisis. At present the plant at Boyer is capable of providing no more than 10 percent of the Commonwealth's post-war newsprint requirements.

The Bill brought in by Premier Cosgrove to govern the timber-getting operations of Tasmanian Paper & Timber Mills Ltd., will give the company a 30 year right over timberlands in the counties of Devon and Dorset. Total amount of pulpwood to be cut in any one financial year is not to exceed 37,000 cords, and the royalty to the Government will be 5 shillings ($1.20 at par) a cord.

Cumberland Paper Board Mills Ltd., Matraville, New South Wales, reports a net profit of $174,518 for the year 1945, an improvement of $659 on the previous year. Ordinary dividend of 6 percent has been paid.

Australian Paper Manufacturers Ltd., show a net profit of $1,791,085 for the year 1945, against $1,235,937 for the previous year. Total reserves of this company now stand at $2,532,854.

An interesting lecture was recently given by Mr. F. C. Ellsworth, in charge of tin-plate control at the Department of Supply & Shipping, before the Food Technology Association of New South Wales. Mr. Ellsworth dealt in some detail with the various packaging methods used in the United States, including the uses of paper and cellophane, and screened a number of interesting films depicting the processes.

A heavy packaging paper consisting of two sheets of tough Kraft sandwiching a heavy layer of bitumen is now being manufactured by A. Abrahams & Sons, Pty. Ltd., of Fitzroy, Victoria Firm is using the trade name of "Fish-bak" for this product.

The Goodyear Tire & Rubber Co., Akron, Ohio, has registered the word "Vitafilm" for a film for wrapping, packaging and covering, throughout Australia. Other trade marks recently registered include: Word "Papex" for reinforced paper; "Adkraft" for a lacquer treated paper; "Flavaseal" for sheets made from cellulose pulp; and "Nudex" for paper (except paperhangings) and stationery.

Production of woodpulp for papermaking is now being carried out on some considerable scale in Victoria. First plant opened in 1937, and two years later a further plant came into operation, the two having a capacity of some 30,000 tons of pulp per annum. Associated with these mills is a papermaking plant capable of producing about 20,000 tons of Kraft paper per year. Timber used consists mainly of hardwoods which are at present unsuitable for other purposes, together with a small proportion of pine—mainly thinnings and mill waste.

Major-General C. S. Steele has been appointed a director of Australian Paper Manufacturers Ltd. From April 1942 until recently he was Engineer-in-Chief of the Australian Military Forces, and he spent some time in North America carrying out special duties on behalf of the Australian Army.

Alex Cowan & Sons Ltd., leading Australian paper merchants, advise that the general manager (Mr. J. J. Thompson) and the chairman (Mr. W. H. Swaton) have retired from the Australian board, and that Sir Keith Smith has now been appointed chairman, with Mr. G. C. Bretnall (general manager) and Mr. T. S. Waley (assistant general manager) as associate directors.

Western Paper Mills has been registered in Perth, Western Australia, with A. & J. Prendergast, H. B., J. & H. W. Brady, H. Bowden, H. McDonald, G. Kay, A. McGrath and F. Richards as members.

Goetzman on Board of Quarter Century Club

KAUKAUNA, Wis. — Fred Goetzman has been appointed by President Ray Schmals of the Thilmany Quarter Century Club, to fill the unexpired term of William Gillen to the club's executive board. Mr. Gillen, employe of the mill for 41 years, has left Kaukauna to take a position as assistant superintendent of the Fox Paper Company mill at Lockland, Ohio. At Thilmany, he served as president of the Thilmany's Employes Association, vice-president of the Quarter Century Club and as a member of the Foremen's Club.

Kimberly Golf Party Lasts Into Night

KIMBERLY, Wis. — The Kimberly Recreational association golf jamboree will be held Saturday, August 10, at New London, from noon until midnight. This is the association's first jamboree but it is also a continuation of the annual Kimberly mill jamboree. It is open to all residents of the village and to all Kimberly-Clark employes.

Pacific Mills Adds McLaren To Its Board of Directors

VANCOUVER, B. C.—W. D. McLaren, managing director of West Coast Shipbuilders, Ltd., has been elected a member of the board of directors of Pacific Mills, Ltd. Mr. McLaren came to British Columbia from Scotland in 1927 and has been actively engaged in the steel and engineering industry since that time. He has been head of West Coast Shipbuilders since that company was formed in 1941.

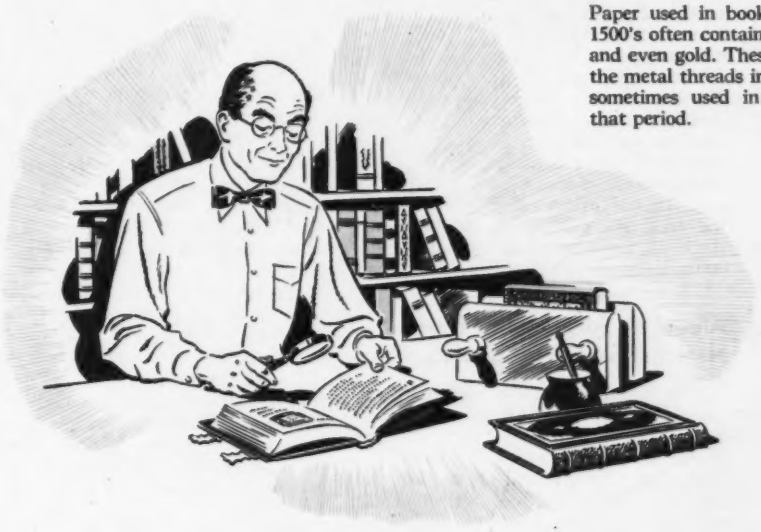
Stone Container Absorbs Franklin Board & Paper

CHICAGO—Stone Container Corporation has bought all the fixed assets of the Franklin Board and Paper Company of Franklin, Ohio, as of July 30. Norman H. Stone, president of Stone Container, said that hereafter the acquired company shall be called Stone Container Corporation, Franklin Board and Paper Company Division.

Jim Grode Enters Second Round

NEENAH, Wis.—Jim Grode, defending champion, scored a 3 and 2 victory over William McGuire in the first round of the annual Kimberly-Clark Corporation golf championship tourney at Ridgeway Golf Club. O. Kloes defeated Darwin Wamsley, 4 and 3. Chet Bland, medalist in the qualifying round with a par 72, and Joe Kohler drew byes and advanced to the quarter finals.

Interesting Facts About Paper



Paper used in books printed during the 1500's often contained particles of copper and even gold. These particles came from the metal threads in brocades which were sometimes used in papermaking during that period.

Interesting Facts About Pheno Orange 5RE

PHENO ORANGE 5RE is an economical red shade of Direct Orange, particularly desirable where money value and good color value on the red shade side are of interest. It produces level dyeing and is used with excellent results on papers that need to be of good fastness to bleeding.

Complete information on PHENO ORANGE 5RE is available from your Heller & Merz representative on request.

Heller & Merz Department

CALCO CHEMICAL DIVISION • AMERICAN CYANAMID COMPANY

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Fiberboard Products To Spend 24 Million

Financing has now been completed and work is already well under way on a $24,000,000.00 three-year expansion program of Fibreboard Products Inc., according to an announcement by D. H. Patterson, Jr., President. New mills are to be built and additions made to existing plants which will provide permanent jobs for an estimated 1,000 new regular employees. Upon completion of the program, Fibreboard will have about 6,000 employees with an annual payroll in excess of $16,000,000.00, of which 95 percent will be paid to regular workers in Fibreboard's mills, carton and shipping container plants, and in the plants of Fibreboard's subsidiaries located in California, Washington and Oregon.

Largest single project in the Fibreboard three-year plan is the erection of a new two-machine board mill and converting plant on the south bank of the San Joaquin River about two miles east of Antioch, California. This project, which will be known as the San Joaquin Division of Fibreboard, will add over 200 tons per day to the existing board mill capacities. The company has acquired 95 acres on the mainland and a 155 acre island in the river for the new plant. This site was selected for its several natural advantages for a mill of this type, its relation to other plants of the company in this area and proximity both to sources of raw materials and to markets for its finished products. This project alone, when its first unit is brought into production early in 1948, will give regular employment to over 400 people.

This year Fibreboard added many thousands of acres of land to its timber holdings, including the timber and complete logging and operating facilities of the Crescent Logging Company, located on the Olympic Peninsula in Washington. These properties are operated by the logging divisions of Fibreboard, which have already added many new employees to its payroll.

Hammermill Resumes August Conferences

ERIE, Pa.—For the first time since 1942, the Hammermill Conference with Hammermill Agents will be held in August. August 20 to 24 are the dates. Until 1942, this meeting had been an important mill and merchant conference for 31 consecutive years, without a break since 1912. In 1943 and 1944 no conferences were convened because of wartime restrictions. Last year the thirty-second conference was held in Erie in October.

Hammermill anticipates that attendance of its domestic and foreign distributors at this year's meeting will break all records.

Provincial Plans to Retire Bonds and Preferred

TORONTO — Provincial Paper., Ltd. proposes to retire all its outstanding $2,740,000 5½ percent first mortgage bonds at par on November 1, 1946, and its $3.5 million 7 percent cumulative preference shares at $107 a share and accrued dividends on Oct. 1, 1946. Funds for the redemptions will come from a new issue of 20,000 shares of 4 percent cumulative preferred stock, par $50, and from the sale of an additional 250,000 no-par-value common shares for $4 million to the parent company, Abitibi Power & Paper Co., Ltd., who owns all the outstanding 100,000 common shares. As a result of this transaction, Provincial Papers will have no funded debt, $1 million 4 percent preference stocks and 350,000 of no-par-value common shares outstanding. Annual dividend requirements on the preferred will be cut to about one-sixth of the previous amount—$40,000 a year, as against $245,000 a year.

Albert C. Funk Retires from National Starch Products

NEW YORK—After 35 years with the National Adhesive Division of National Starch Products Inc. and its predecessor companies, Albert C. Funk, one of the grand old men of the Adhesive Lndustry has retired from active business life. However, he wants everybody to know that he is not so old and expects to enjoy good health in the many years that are still to come. He can be contacted through the Philadelphia office of National Starch Products Inc. During his period of service, he has been instrumental in many of the progressive steps made by the adhesive industry, and also has been a director of many trade organizations allied to the adhesive industry.

Mine Workers To Bargain For Electric City Workers

NIAGARA FALL, N. Y.—The United Mine Workers of America, District 50, will act as the bargaining agent for employes of the Electric City Paper Mills, Inc., it was learned here. Negotiations are underway and terms of the agreement are expected to include an average wage increase of 21 cents hourly, which includes the seven and on half cents an hour raise given to about 33 workers in January by the company, time and one half pay for Saturday, double time pay for Sunday work and vacation privileges.

Nickerson Goes to Chicago

HOLYOKE, Mass. — T. K. Nickerson has been appointed manager of the Chicago office of White & Wyckoff Co., stationery manufacturers. He has been with the company for the past 28 years.

OPA Eases Prices On Box Material

WASHINGTON, D. C.—Non-integrated manufacturers of paperboard folding and set-up boxes may add to their existing ceiling prices any increases they incur in their raw material costs after May 15, 1946, the Office of Price Administration announced today. This does not apply, however, to increases incurred between July 1 and July 25.

This action, effective July 27, 1946, does not apply to integrated manufacturers, which means those fully or partly owned, controlled by or financially connected with their raw material suppliers.

Heretofore, both types of manufacturers have not been able to use raw material costs above those in effect on March 31, 1943. Between that date and May 15, 1946, various increases have occurred in such costs which, while still leaving integrated manufacturers with earnings substantially above the base period, have brought earnings of non-integrated companies to about even with their base period.

Consequently, to prevent earnings of the non-integrated companies from falling below base period levels, today's action permits the addition to existing ceilings of any raw material cost increases incurred subsequent to May 15, 1946.

Manufacturers sell these boxes to industrial users who will absorb any increases in ceiling prices that may occur.

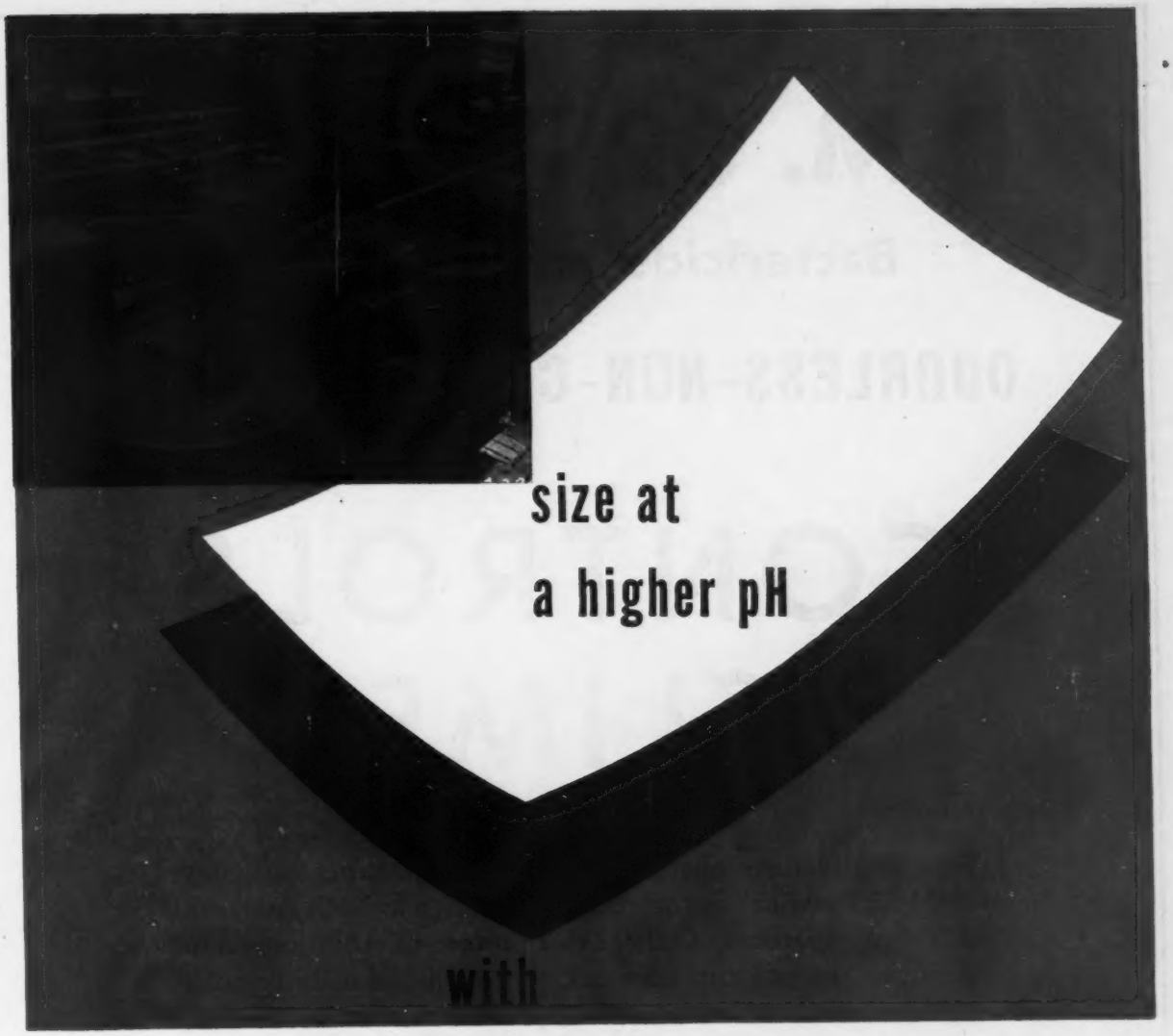
This action also makes two other changes in the regulation:

1. It prohibits manufacturers of corrugated fibre sheets, corrugated fibre boxes, solid fibre sheets, solid fibre boxes, pads, partitions and other corrugated and solid fibre paperboard products manufactured on the same converting equipment from including in their maximum prices any increases in raw material costs incurred during the period July 1, 1946.

2. Manufacturers of pads, partitions and other inner packing materials designed for use in corrugated, solid fibre or wooden shipping containers are allowed to use current acquisition costs in estimating their ceiling prices. Some shipping container manufacturers, OPA explained, also manufacture these inner packing materials. Other manufacturers do not produce boxes, only the inner packing materials. Before today's action, only the container manufacturer was allowed to use his current acquisition cost of these packing materials in computing his ceiling.

Rising Outgolfs Strathmore

HOUSATONIC, Mass., Aug. 5 — The Rising Paper Company golf team defeated the Strathmore Paper Company team on the Russell Club links yesterday by a score of 10-5.



Monsanto's SODIUM ALUMINATE

Mill men using Monsanto's Sodium Aluminate have discovered advantages with this alkaline source of alumina never before possible through any combination of materials or methods:

Stability—6% solutions are stable almost indefinitely . . . may be introduced at any point in process prior to formation of web . . . eliminates costly shutdowns and repairs due to clogging of lines.

Eliminates Pitch Troubles at press rolls, due to insufficient alumina in furnish.

Reduces corrosion and increases wire life.

Reduces acidity of white water—more suitable for re-use.

Improved paper product—less yellowing, less brittleness with age; better color retention.

MONSANTO CHEMICALS
SERVING INDUSTRY . . . WHICH SERVES MANKIND

If you are not yet acquainted with the advantages of Monsanto's Sodium Aluminate, ask for full information today . . . samples, technical bulletins, or arrangements for a mill trial. Address: MONSANTO CHEMICAL COMPANY, Merrimac Division, Boston 49, Mass.

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Bactericide and Fungicide

ODORLESS-NON-CORROSIVE-SAFE

CONTROLS SLIME

Specifically developed for the pulp and paper industry, "PM 32 Powder" is completely effective in both Acid and Alkaline systems. **Only ½ to 1 ounce** of this powerful disinfectant per ton of stock, dry basis, is usually sufficient to control slime-forming micro-organisms in a pulp or paper system. Eliminates odor-forming Sulphur Bacteria. Maximum Efficiency—Minimum Toxicity.

For complete information write

A. J. LUTH

FALLS CHEMICAL PRODUCTS COMPANY

OCONTO FALLS, WISCONSIN

ARE YOU COMPELLED TO USE MORE AND MORE

SHORT FIBERS IN YOUR FURNISH? IF SO, THE

SUTHERLAND

continuous

BEATING AND REFINING

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CAN ASSIST YOU IN MAINTAINING QUALITY

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TRENTON, NEW JERSEY · *Manufactured in the United States by Valley Iron Works Co., Appleton, Wis.*

SUTHERLAND REFINER LIMITED 1170 DRUMMOND BLDG. MONTREAL P.Q. *Manufactured in Canada By The John Bertram & Sons Co. Ltd. Dundas, Ont.*

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When you order a READING CRANE, our engineers offer you a choice of several interchangeable motor, trolley and hoisting units. The crane is then "tailor made" to your own job requirements.

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See your nearest distributor for more information on how READING UNIT CRANE DESIGN can give you better materials handling at less cost. And for your free copy of "The Why and How of Faster Production", drop us a line, today.

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OVERHEAD TRAVELING CRANES

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Spray Moistening Bulletin Offers Complete Data

Spray Moistening by use of completely Automatic "Battery Spray Moistening Units" is the subject of a new technical bulletin announced by Spray Engineering Co., Somerville, Mass. Primarily dealing with the spraying of water for moistening moving sheets in paper mills, the bulletin contains specific data in chart, drawing, and photo form. The same equipment is also finding extensive use for the application of chemicals, sizings, etc., wherever very carefully and uniformly controlled application is required. These applications are being made on textiles as well as paper. The bulletin contains a general questionnaire sheet outlining specific information necessary to submit to secure quotation.

Brotherhood Plans Picnic For Tissue Employes

HOLYOKE, Mass., July 25—William Bessett is general chairman of the annual picnic sponsored by the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, No. 203, of the American Tissue Mills. This year's outing will be held Saturday August 10, at Couture's grove, Hampton Ponds. Committees are now being formed to make this year's affair one of the most outstanding in the long history of the Tissue Mills gatherings.

LaMarche Is Named Auditor

FORT EDWARD, N. Y.—The International Paper Co. has appointed Harold F. LaMarehe as auditor to succeed the late B. O. Booth. He was born in this village and has served with the firm in Glens Falls, Watertown, Berlin, N. H., Port Edward, and other places. For the past number of years he has been connected with the New York branch as assistant to the vice-president.

Ryan Talks to Thilco Foremen

KAUKAUNA, Wis.—The Thilco Foremen's Club of the Thilmany Pulp and Paper Company heard a talk by Thomas J. Ryan, Appleton attorney, Monday evening, August 5. Mr. Ryan discussed his experiences while in the service in the United States and in Germany.

Robert Driessen addressed the group at the business meeting before a dinner at the Kaukauna Elks hall. He discussed the functions of the production control department at the mill.

Bob Stevens Joins Angelus

LOS ANGELES—R. W. Stevens who recently resigned his position as managing superintendent of the West Coast Paperboard Mills has been made manager of a new paperboard mill being erected for the Angelus Paperbox Co. in Los Angeles. He has been acting as Papermill Consultant for the Angelus company during the planning and building of the mill.

OBITUARY

Albrecht Pagenstecher

STOCKBRIDGE, Mass. — Albrecht Pagenstecher 3d, 41, of Southampton, grandson of Albrecht Pagenstecher who was a founder of the International Paper Co., and whose father, Alberto, was associated with the first wood pulp mill in America at Interlaken, died Tuesday in Southampton Hospital.

A graduate of Williams College in 1926, Pagenstecher, a native of New York, had long been in the brokerage business. He was a founder and an officer in the State Airlines, Inc., in New York.

Frederick Wurtzbach, brought the first pulp paper machines to this country from Germany. Alberto Pagenstecher who survives his son, was associated with him in Curtisville, now known as Interlaken.

Charles Allen Bowles

SPRINGFIELD, Mass., Aug. 3—Charles Allen Bowles, a grandson of Samuel Bowles, Civil War editor of the Republican and one time official of American Writing Paper Co., Holyoke, died last night at the New Haven Hospital. He had been in failing health for some time, but was visiting with his wife at the home of his brother, Chester Bowles, former head of the OPA, in Essex, Conn., when he was taken acutely ill and was hurried to New Haven two weeks ago.

Mr. Bowles was born in this city, Sept. 20, 1889. For a time, Mr. Bowles was employed by the American Writing Paper Company. He is survived by his wife, Mrs. Helen (Sims) Bowles and two daughters, Mrs. Richard Crane Bagg of Old Greenwich, Conn., and Miss Mary Gardiner Bowles; also by his sister, Miss Dorothy Bowles and by his brother, Chester Bowles.

Patrick J. Liston

LENOX DALE, Mass., Aug. 3—Patrick J. Liston, 67, retired veteran employe of Smith Paper, Inc., died this morning at his home after a short illness. He was born in Ireland and had lived in this village 20 years. He retired two years ago because of ill health after working as a beater engineer at Smith Paper, Inc., for 27 years. He is survived by his widow, the former Miss Elizabeth Campbell; three daughters, Mrs. Joseph Sullivan of Housatonic, Mrs. George Fulker of this village and Mrs. Richard Kelly of Great Barrington; three sons, Robert, Charles, and Edward F.; three brothers, Michael of Lukewood, N. J., Thomas of Lenox and John of Ireland, and eight grandchildren.

THE MEAD SALES COMPANY
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MEAD
pulp

DISTRIBUTORS OF WOOD PULP
BLEACHED AND UNBLEACHED
CHEMICAL AND MECHANICAL WOOD PULP

Babe, Paul Bunyan's Blue Ox, was in a hurry to get to work every morning. He would drag Hels Helson along so fast that the Big Swede touched the ground only every mile or so.

A reproduction of this incident from the fabulous life of Paul Bunyan—the ninth of a series—will be sent on request. It will contain no advertising.

"Pulp Quality Raised";

"OUR STREAMBARKER IS AVERAGING 9½ CORDS PER HOUR" BELOW, COMPARE RESULTS AT 11 OTHER MILLS!

MILLS MAKING HIGH-GRADE PAPER are quick to appraise the value of any new equipment which can maintain a cleaner woodroom operation and thus lead to higher pulp quality.

This cleanliness of process, along with other important savings in wood, extra operations and machines, is the primary purpose of the modern Allis-Chalmers Streambarker hydraulic log barker.

Pictured here in operation at one of the nation's leading mills producing high-grade book and magazine papers, Streambarker is barking an average of 9½ cords of Spruce, Hemlock, etc. an hour. Logs are taken from a hot pond, are barked and conveyed directly to chippers or to storage—with minimum recirculation. The standard of performance established at this mill has led to the recent installation of an additional Streambarker in another of the company's mills.

For a complete explanation of Streambarker operation, plus a handy form which enables you to accurately estimate savings Streambarker can effect in your mill, get in touch with the experienced representative in your nearby A-C office, or write direct for "Streambarker Economics" bulletin B6391. ALLIS-CHALMERS, MILWAUKEE 1, WISCONSIN.

A 2043

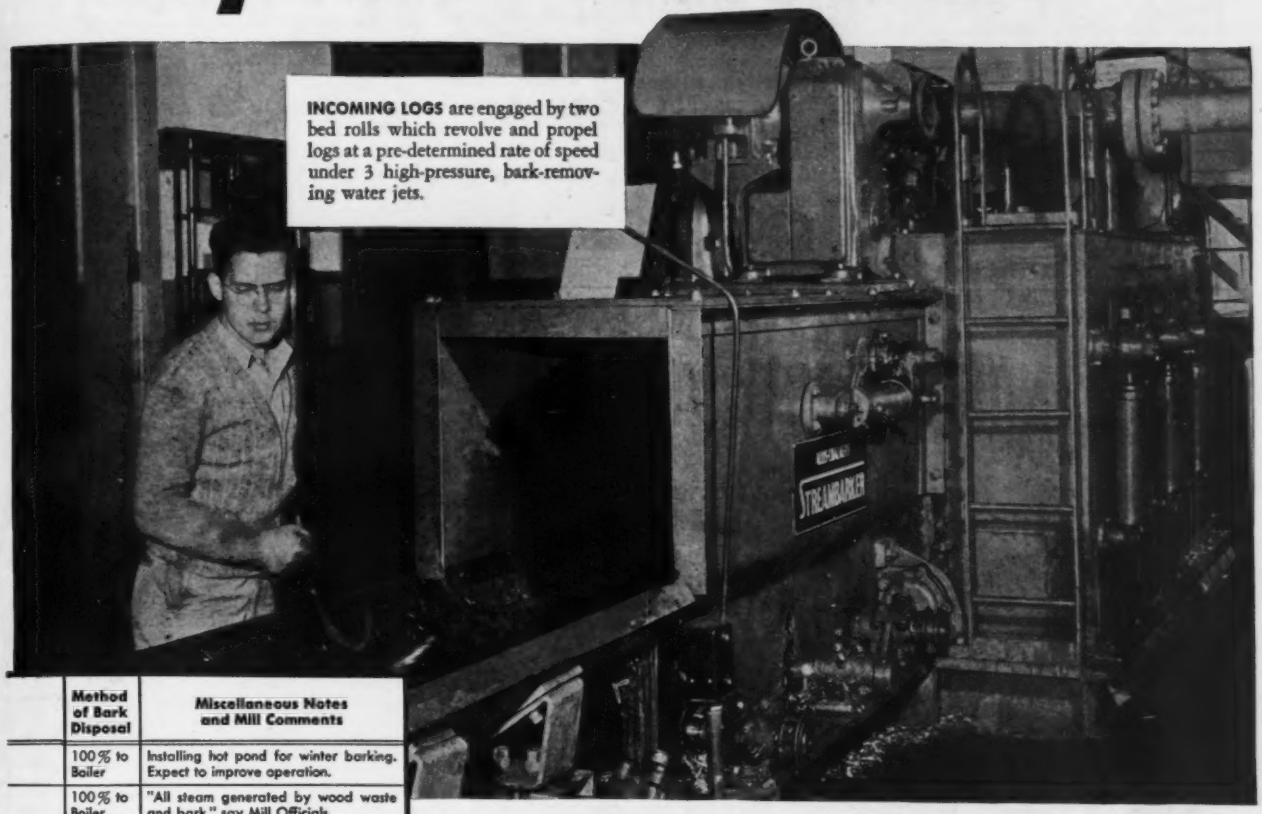
12 MILLS REPORT ON STREAMBARKER

MILLS	Species of Wood Barked	Size of Logs Barked	Streambarker Schedule		Water Pressure		No. of Men, Convey., Barker, Inspec.	Capacity		Process in which Streambarked Wood is Used
			Hours per Day	Days per Week	Summer	Winter		Summer	Winter	
MILL A	Spruce, Fir and Hemlock	4 to 18" diam., 4 ft. long	16 to 24	6 to 6½	750 lbs.	750 lbs.	4	9	6	50% Sulphite 50% Groundwood
MILL B	Spruce, Fir and Poplar	4 to 18" diam., 4 ft. long	9	6	670 lbs.	670 lbs.	3	10	8	100% Groundwood
MILL C	Spruce and Hardwood	4 to 20" diam., 4 ft. long	24—auxiliary to drums	6 to 6½	650 lbs.	650 lbs.	4			Bleached Sulphite
MILL D	Spruce	4 to 18" diam., 4 ft. long	9 to 12	6	730 lbs.	730 lbs.	4	13	8½	88% Sulphite 12% Groundwood
MILL E	Balsam, Hemlock, Spruce, etc.	4 to 20" diam., 4 ft. long	16	6	670 lbs.	770 lbs.	3 to 4	9½		60% Sulphite 40% Groundwood
MILL F	Spruce and Fir	3 to 18" diam., 4 ft. long	Auxiliary to drums	6	750 lbs.	750 lbs.	3			Groundwood, Unbleached Sulphite
MILL G	Spruce and Fir	3 to 18" diam., 4 ft. long	24	6½	780 lbs.	780 lbs.	4	9	7	100% Sulphite
MILL H	Birch, Maple, Beech	4 to 18" diam., 4 ft. long	17	6½	635 lbs.	635 lbs.	7 incl. unload, loading	9	7½	100% Soda
MILL I	Poplar and Spruce	4 to 20" diam., 4 ft. long	16	6½	750 lbs.	750 lbs.	4	10	7	100% Sulphite
MILL J	Spruce, Fir, Pine, Hemlock	4 to 20" diam., 4 ft. long	24	7	650 lbs.	750 lbs.	3	9½	6½	50% Sulphite 50% Groundwood
MILL K	Pine, Birch, Poplar, etc.	3 to 20" diam., 4 ft. long	8	6	675 lbs.	675 lbs.	5	10	6½	100% Soda
MILL L	Spruce	3 to 20" diam., 8 ft. long	16	6	675 lbs.	675 lbs.	4	10	9½	50% Sulphite 50% Groundwood

ALLIS-CHALMERS

One of the Big 3 in Electric Power Equipment—
Biggest of All in Range of Industrial Products

say Mill Officials!



INCOMING LOGS are engaged by two bed rolls which revolve and propel logs at a pre-determined rate of speed under 3 high-pressure, bark-removing water jets.

	Method of Bark Disposal	Miscellaneous Notes and Mill Comments
	100% to Boiler	Installing hot pond for winter barking. Expect to improve operation.
	100% to Boiler	"All steam generated by wood waste and bark," say Mill Officials.
	Bark to Dump	Streambarker used on wood which other barking equipment cannot handle.
	100% to Boiler	"Pulp quality raised materially," say Mill Officials.
	Bark to Incinerator	Booster pump for winter barking has recently been installed.
	100% to Boiler	Streambarker barks wood which other barkers cannot efficiently handle.
	100% to Boiler	Streambarker is first full-scale barker this mill has installed.
	Bark to Dump	One of 1st Streambarker installations—yet low maintenance right along.
	100% to Boiler	"We've eliminated knot boring, hand-cleaning, etc.," state Officials.
	½ to Boiler, ½ to Dump	Streambarker cleans logs that cannot be cleaned by other barkers.
	100% to Incinerator	"Barker operation and capacity both very good," say Mill Officials.
	100% to Boiler	Booster pump being installed to raise pressure to 775 pounds.

NEW MOVIE RELEASE!

FREE 16 MM PRINTS now available of new color-sound movie, "The Case of the Barking Logs". Filmed during sub-zero weather, it shows entire Streambarker operation, inside and out; explains clearly its principles of operation. With film you will receive copies of illustrated 8-page booklet reviewing the movie. Film runs 9 minutes on 16 mm sound projectors. Copies available through A-C advertising Dept. Be sure to state approximate number of people expected to see movie. NOTE: This film offer good only in continental U. S. A. ALLIS-CHALMERS, MILWAUKEE.

PREPARATION—Hydraulic Barkers, Chip Screens, Saws, Slashers, Grinders.

COOKING—Digesters, Blow Tanks, Kilns, Heat Exchangers, Condensers.

WET ROOM—Vibrating Screens for use as Thickeners, dewatering rejects, etc.

PAPER-MAKING—special drives for Paper Machines, Rewinders, Calenders.

POWER—all types of Power Generation, Distribution and Control.

MOTORS and control—all types a-c and d-c, 1 to 7000 hp—Gearmotors.

TEXROPE V-belt drives—fractional to 5000 hp—constant and adjustable.

PUMPS—Single and Multi-Stage, 10 to 150,000 gpm—Paper Stock Pumps.

Wood Buys Control Of Paper Machine

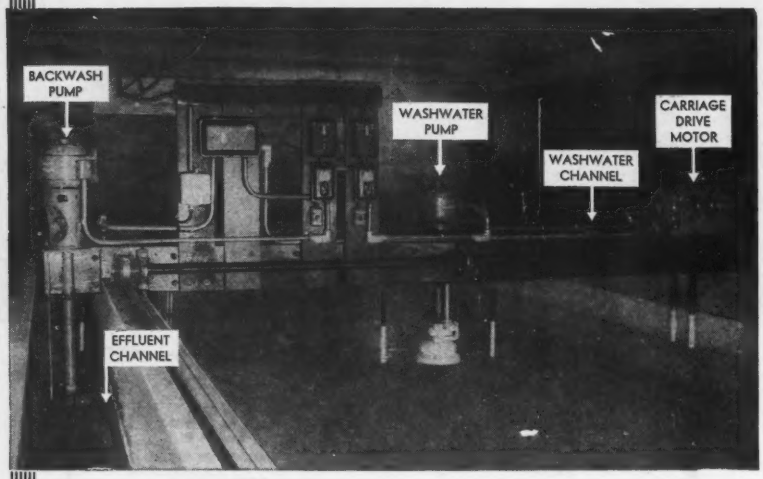
GREEN BAY, Wis.—Lester G. Wood, vice-president and treasurer of the Paper Converting Machine Company since 1936, has purchased the controlling interest in that company, and, together with associates, has taken over its active management. B. L. Walter continues as president. He and Mr. Wood are the only old stockholders remaining with the company.

Peter J. Christman, one of the founders of the company, while retiring from active business connection, will continue as consultant in the development of new machines and the business in general. He had been vice-president of the company in charge of manufacturing, up to the first of this year, when he became chairman of the board of directors.

E. M. Kwitek, who has been with the company since 1929, will be in charge of manufacturing. Dan Nystrand, chief engineer, will continue in that capacity under the new management.

Mr. Wood, prior to his purchase of stock in the Paper Converting Machine Company in 1936, was associated with the Northern Paper Mills, of this city, as vice-president in charge of sales, and assistant general manager.

MAINTENANCE: NIL



Suspended solids removal: ***97.4%*** *average*

• A HARDINGE AUTOMATIC BACKWASH FILTER

12½′ wide and 90′ long was installed in the Newton Falls, N. Y., Paper Mill last January 1st to process raw reservoir water for paper making. Since that time, the ABW Filter has been in continuous operation *without adding sand to the filter bed, without changing the sand in the filter, the backwash mechanism operating about 4 times every 24 hours.*

HARDINGE
COMPANY INCORPORATED
YORK, PENNSYLVANIA — 240 Arch St. • Main Office and Works
NEW YORK 17—122 E. 42nd St. • 205 W. Wacker Drive—CHICAGO 6
SAN FRANCISCO 5—501 Howard St. • 200 Bay St.—TORONTO 1

Wyandotte Chemicals Plan Expansion

DETROIT — Wyandotte Chemicals Corporation will spend $25,000,000 in additions to its present plants within the next eighteen months, according to E. M. Ford, president. In 1944 it was decided that the company would enter the field of glycols and related compounds, but it was not until 1946 that construction could be started. Buildings are now virtually completed and new equipment is being installed as fast as it can be fabricated. It is anticipated that the new plant will be in production by the spring of 1947.

Another organic chemicals plant included in the program is a large scale commercial unit to be completed in the fall of 1947 for production of synthetic detergent. All told the new diversification program of the corporation calls for production of nearly 100,000,000 pounds per year of organic chemicals, which represents a substantial increase in the nation's productive capacity for chemicals of this type.

Expansion phase of the new construction program includes increased capacity for almost all of the company's alkali products. Soda ash capacity will be stepped up 15 percent. Chlorine capacity will be increased to exceed the additional requirements for captive use and will provide adequate supplies for the paper industry. Calcium carbonate will be increased from two to five units, each of the three new units having 50 percent more capacity than the original units built in 1939. Calcium carbonate expansion is expected to be completed by January 1, 1947, while the other inorganic plants will not be finished until January, 1948. Altogether, the additional capacity for these inorganic products will approximate 600 tons per day. Also vitally important to the entire program will be the installation of new facilities which will approximately double the present steam and power production. In addition to the expansion program as outlined, Mr. Ford emphasized that Wyandotte's research and development work would continue to expand.

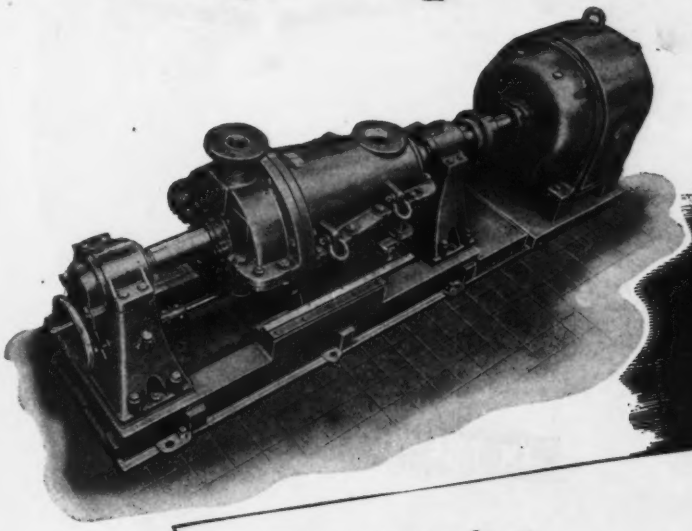
Package Machinery Seeks To Buy WAA Factory

SPRINGFIELD, Mass., Aug. 1—Package Machinery Company is one of the major bidders for the huge modern plant in East Longmeadow, built by the U. S. government during the war for use by Pratt & Whitney Aircraft Company. Roger L. Putnam, chairman of the board, said Package is making a strong effort to buy the plant from the War Assets Administration. He refused to reveal details of the company's bid.

Package Machinery has been known for some time to be in need of larger manufacturing headquarters due to its constant growth since it moved into its present location in 1917.

SERIES "A" OF TYPICAL JONES HIGH SPEED REFINER APPLICATIONS

a mighty mite for stock preparation



THE JONES *High Speed* REFINER

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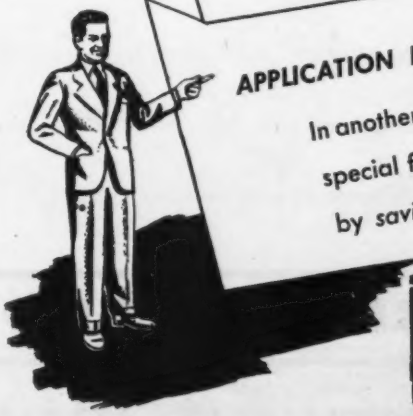
In a mill making 100% rag ledger paper, the Jones High Speed Refiner refines stock at 40 H.P., (replacing a 100 H.P. Jordan), and produces stock at a range between 300 to 600 lbs. per hour.

APPLICATION No. 2:—

By further refining stock from beaters in a mill making rag electrical papers, the Jones High Speed Refiner reduces beating time considerably.

APPLICATION No. 3:—

In another mill, one Jones High Speed Refiner, with special filling, refines ground wood rejects thereby saving material which was formerly wasted.



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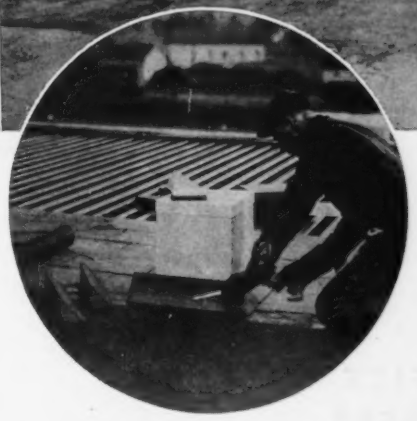

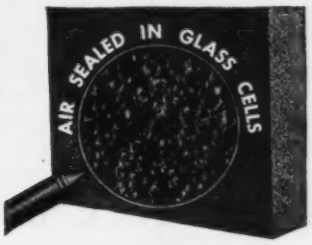

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Twenty-Eighth Year

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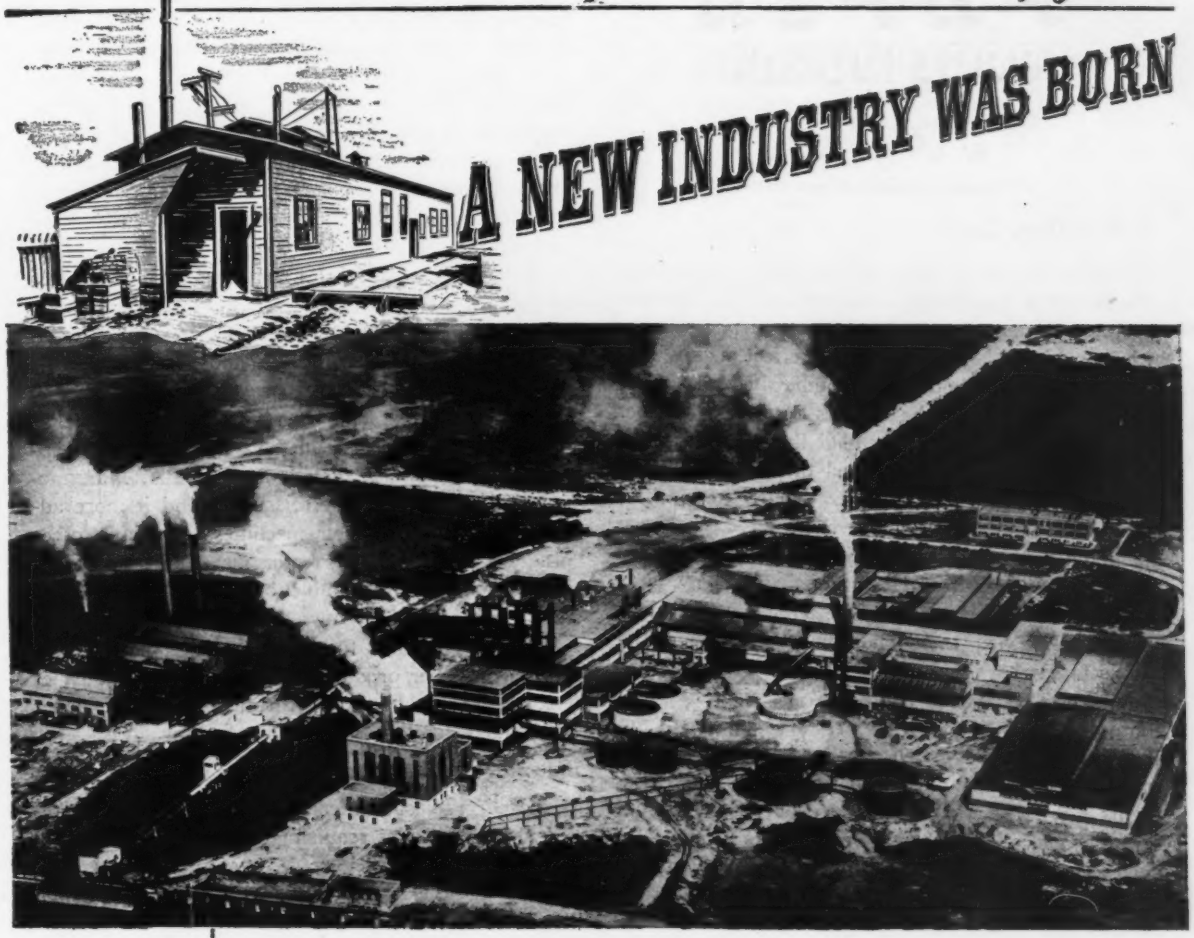
TITANOX . . . *the brightest name in titanium pigments*

A NEW INDUSTRY WAS BORN



In 1914, back in the days when the guns of World War I started to boom, the first batch of Titanox-B (Titanium Barium Pigment) was turned out in a small pilot plant at Niagara Falls, New York. At that time, titanium was considered "a chemical curiosity" and a rare element.

In 1916, a factory was built in Niagara Falls for the commercial production of titanium pigments which started operation in 1918. Thus, Titanox became the original commercial titanium pigment in the United States.

The outstanding qualities of opacity, whiteness and brightness which characterized this original "curiosity" proved themselves, and the demand for Titanox pigments became so great that a second and larger factory was erected in St. Louis, Missouri, in 1923.

Later, another factory was built in Sayreville, New Jersey, where production has been going on uninterruptedly since 1935. At both the latter locations, the factories have expanded considerably to meet increasing demands for Titanox.

Today, the producers of Titanox are proud of their past untiring efforts toward supplying greater quality products and will constantly continue their efforts in this direction.

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PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

W. L. Cook, Editor

What They Say

One of the most beneficial results of a soundly planned and persistently followed public relations program—often the most easily ignored phase of the whole project—is the educational effect that it may have on its own sponsor. A notable increase of attentiveness to the public and its reactions to paper shortage has been discovered all the way along the line by those who have watched the pulp and paper industry over its years of growth. At times, these authorities remark, the attentiveness has been thrust upon the industry; at times its methods, developed with an eye to effectiveness rather than display, have gone in most direct ways to the point of cultivation and accomplished their ends without inviting the public to see how the machinery works. But always, they add, the men at the mills have become more and more acutely interested in what others say about the business, in what experience others have had with its products, and in the effect that its own troubles have on its market. Action to improve or correct conditions always follows when the industry is free to take such action. This is the reason for the deep, if often undisplayed interest, that the paper man takes in reports from the markets, which are in immediate contacts with the user.

This interest of late has produced a kaleidoscopic picture with blue as the dominant color. The American Newspaper Publishers Association, quick to get to the mimeograph with the return of OPA, signalled its objection to a price on newsprint that had been established by Canadian mills after Canada's currency had been stabilized.

American publishers since the advance, had been ordering newsprint from Canada at $73.80 a ton. The ANPA pointed out that with extension of OPA for another year, newsprint could not now be sold above the previous ceiling. ANPA also declared that no mill recommendations for a change in the price ceiling of newsprint were made pending opinions of the OPA legal staff regarding procedure.

"At this time, it is a guess," the statement declared, "as to when OPA will take action. A meeting of an informal task group of the OPA advisory committee comprising representatives of United States mills was held in Washington on Monday but reports indicate that this committee made no recommendations as to newsprint prices, because the committee is awaiting opinions of the OPA legal staff regarding procedure. OPA continues to have the same power as before June 30."

Paper products—cleansing and toilet tissues, napkins, plates, towels, bags and wrapping—are scarce and from all indications are going to continue so for many months to come. The Chicago Daily News made a survey of manufacturers, jobbers, dealers and large users to ascertain the reasons. The causes advanced were many, and each contributed in some measure to the existing shortages.

Summarized, blamed for the condition are scarcity of pulp, a labor shortage, unfavorable prices under OPA, changes in production and, to some extent, black markets. Meanwhile, demand for paper products in home use has grown steadily.

Another major factor contributing to the shortages of items which are used in the homes and for wrapping was the price situation under OPA. Manufacturers of toilet and other tissues found it more advantageous to turn their machines to making other products, on which a greater margin of profit existed. It was more profitable to make industrial towels than napkins.

Wartime demand for shipping cases has had its impact on paper products for home use. Large paper box users, unable to get cartons, purchased paper plants and converted them into box producers.

Productive Capacity Cut

Inability to obtain cotton and burlap sacks resulted in companies requiring such packaging to turn to multi-wall paper bags. This took a large productive capacity away from paper for wrapping and home use.

Jobbers formerly had large warehouse stocks and could fill orders in any quantity. Today, the warehouses are almost empty. Toilet tissue, towels, napkins, wrapping paper and bags are doled out, in individual cases or rolls.

Some distributors are reported as pretty angry because while they can't get deliveries from mills they are offered black-market goods in big quantities.

Retailers are of the opinion that they could get twice as much goods and still not supply the demand. A flow of population from farms to city and education in the use of paper products in the armed services created new customers.

For large industrial users of paper products, the situation is a headache. Retailers helped ease their problems with the aid of a cooperative buying public which made use of shopping bags. Some users went to higher-priced papers, of which there seemed to be a greater supply, as an emergency.

No one was hopeful on the immediate outlook. The consensus was that the situation will continue through the remainder of the year. Some new plants are under construction but it takes at least a year to build and equip one.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry, has elected the following to membership:

Robert E. Bauer, Packaging Engineer, Deerfield Packing Corp., Bridgeton, New Jersey, a 1928 graduate of Yale University.

Paul A. Debois, Director, COBELPA "Association des Fabricants de Pates, Papiers and Cartons de Belgique," Brussels, Belgium, a 1937 graduate of Université de Grenoble.

Daniel C. Hey, Jr., Superintendent, Arkell Safety Bag Co., 6345 West 65th St., Chicago, Illinois, a 1923 graduate of Brown University.

William H. McPherson, Jr., Student, Institute of Paper Chemistry, Appleton, Wisconsin, a 1942 graduate of Syracuse University.

Donna Price, Research Chemist, Hercules Powder Co., Experiment Station, Wilmington, Delaware, a 1934 graduate of Goucher College, and a 1937 graduate of Cornell University.

Robert W. Stevens, Mill Manager and Paper Mill Consultant, Angelus Paper Box Co., Los Angeles, California. Attended Hobart College.

Lawrence W. Whitaker, Supervisor, Production Division, S. D. Warren Co., Cumberland Mills, Maine, a 1932 graduate of Massachusetts Institute of Technology.

Gustave F. Williams, Assistant Regional Manager, Liberty Mutual Insurance Co., 516 Sycamore Drive, Decatur, Georgia, a 1930 graduate of Brown University.

Pfc. John M. Hayward, CML. Warfare Headquarters, Dugway Proving Ground, Tooele, Utah, a 1945 graduate of the University of Michigan.

Robert H. McBean, Supervisor of Weights and Moistures, G. S. Eldridge & Company, Ltd., Woodfibre, B. C., Canada, is a 1940 graduate of the University of British Columbia, and was formerly employed by the British Columbia Pulp & Paper Company, Woodfibre, B. C.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1946		Corresponding Weeks—1945	
June 22	106.2	June 23	90.4
June 29	105.5	June 30	88.8
July 6	61.1	July 7	47.9
July 13	95.2	July 14	88.5
July 20	102.8	July 21	89.8
July 27	*104.7*	July 28	93.4

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1945	86.7	89.4	90.2	88.1	89.8	91.2	80.8	88.6	90.2	95.9	95.5	91.0	89.7
1946	94.7	98.4	104.4	102.7	100.7	*104.6*							

COMPARATIVE YEARLY SUMMARIES

	1939	1940	1941	1942	1943	1944	1945	1946
Year to Date	78.6	86.9	93.6	95.2	87.8	87.4	87.9	*99.3*
Year Average	83.4	85.6	97.4	90.4	87.8	88.1	89.7	

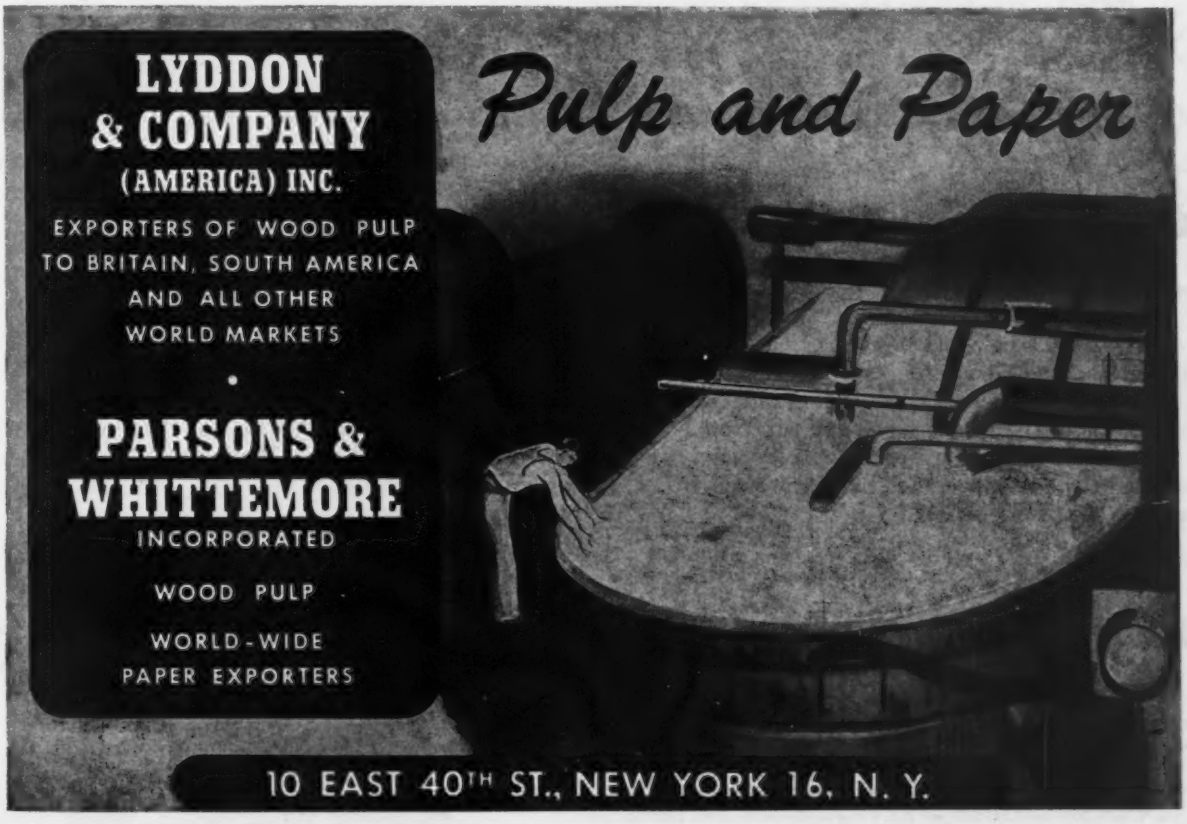
PAPERBOARD OPERATING RATIOS†

Current Weeks—1946		Corresponding Weeks—1945	
June 22	97	June 23	96
June 29	98	June 30	96
July 6	70	July 7	62
July 13	87	July 14	90
July 20	94	July 21	96
July 27	95	July 28	95

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1945	91	95	97	97	96	96	86	90	91	97	95	85	93
1946	90	97	100	99	94	*97*							

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mill producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.



High wet-strength paper—paper that is extra strong when dry and when exposed to moisture—is giving new protection to foods, new convenience to the user, a new and profitable specialty to the paper manufacturer. Bags, vegetable and meat wrappers, labels for canned goods, barrel and crate liners—all these grocery and food store paper products are stronger, longer-lasting, more satisfactory when given the advantage of wet and dry strength imparted by PAREZ Resin 607.

PAREZ Resin 607 imparts improved wet and dry strength to any type of paper from paperboard to fine tissue. It also improves fold endurance, printing qualities, and wet-rub resistance. Paper stocks can be produced by simply adding PAREZ Resin 607, as outlined in Cyanamid's Technical Bulletin 9-B, in the regular paper manufacturing process.

We shall be glad to supply paper manufacturers with complete data on PAREZ Resin 607 and its applications for the production of tougher, stronger, "ready-market" papers.

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**Trade-mark of American Cyanamid & Chemical Corporation covering its synthetic resins for use by the paper industry. The processes under which PAREZ Resin is applied in the production of wet-strength paper are covered by U.S. Patent Nos. 2,291,079; 2,291,080; and 2,345,543; and U. S. Patent Application Serial No. 453,032.

Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Hydraulic Barking of Small Logs*

By E. C. Shaw[1]

Abstract

A report is given on the operation of the hydraulic barker known as the Streambarker. It has been found to operate efficiently with a water pressure of 650 to 675 p.s.i. during the summer and 800 p.s.i. during the winter. Six hundred gallons of water per minute are required.

To obtain the greatest efficiency, it is necessary to engineer the conveyor system so that a continuous supply of logs is delivered to the unit.

The initial cost should not exceed approximately $8000 excluding water piping and electric wiring. It has been found that maintenance charges are very low and parts requiring replacement are mostly the baffle plates and chain drives.

During the last few years more than twenty Allis-Chalmers Stream-barkers have been in continuous operation in the United States and Canada from 16 to 24 hours per day, doing a highly satisfactory job of removing bark, conky surface wood, and dirt from pulpwood sticks at the average rate of 10 cords per hour, based on 90 sticks of 4 foot wood per cord, and in several cases in summer operation, this production has reached 12 to 15 cords per hour.

This hydraulic barker has demonstrated its effectiveness and economy in removing bark from many species of pulpwood which are difficult and expensive to remove by any other method and has made it possible to utilize small aspen and poplar economically which is badly broken or totally destroyed, for pulp purposes, when barked by other methods.

Operation

Experience has proven that for summer operation a water pressure of 650 to 675 p.s.i. is sufficient to do a good job of barking and cleaning on spruce, fir, pine, balsam, hemlock, jack pine, poplar, aspen, and for all other softwoods, and that a pressure of 800 p.s.i. is all that is necessary for winter operations on frozen woods and all hardwoods used for pulping purposes. Some mills use a pressure of 650 p.s.i. for barking hardwoods such as birch, beech, gum, and maple, but a pressure of 800 p.s.i. is more suitable and economical for this purpose. Pressure higher than 800 p.s.i. tends to lift the wood fibers.

The percentage of rejects which are returned for a second pass through the barker vary in all of the mills depending on the cleanliness required for pulping purposes, but based on the average soft wood operation in summer months, the rejects will run from 3 to 8% and these rejects consists of logs with small pieces of bark which have missed the pressure jets, due in most cases, to the irregular shape and sweep of the log as it rotates and passes under the water jets.

In all cases the fungus growth and dirt around the knots and crevices is completely removed without brooming the ends or lifting the wood fibers other than those on the surface of the sticks, which are dozie and not fit for pulping purposes. This can reduce materially the use of knot boring machines. Because of this fact the cleanliness of the chips going to the digester has been increased in many cases as much as 15% thereby upgrading the quality of the pulp.

Checking over the number of barkers now in operation it was found that on an average it takes four men to operate the machine: two to keep the feed chain loaded, one man to straighten logs at the head end of the machine, and one man at tail end for inspection. In some cases this man is not needed when clean logs discharge on the inspection chains carrying wood from other barking sources.

The power to operate these barkers averages 320 kw. per hour when using a booster pump to raise pressure to 750 p.s.i. and 275 kw. per hour when using 650 p.s.i. pressure. This includes the pump motors, drives on the barker, and the power to operate approximately 30 feet of log haul-up chain.

It is desirable in all cases to bark wood in 8 foot lengths wherever possible as a saving is made in saw kerf when eliminating slashing and it was found that wood 8 feet long is more conveniently handled in this barker because its extra length and weight causes less stoppage of machine because of jambs.

Because of the conveyor systems installed in most mills where the hydraulic barker has been added, it is impossible to use 8 foot wood but on all new installations this should be considered.

Conveyor System

Due to the varied conditions existing in the handling of pulpwood to the wood room, it is necessary to engineer the conveyor system for feeding logs to the barker in each individual case. The most desirable method of feeding the logs to the barker is by installing a pond which can be heated for winter use to remove the surface ice on the logs, and feeding the logs onto an inclined feeder conveyor to the barker in a continuous stream.

It must be remembered that the capacity of the barker is dependent on a full and steady feed of logs as all intermittent space is a loss of capacity and power.

The method of feeding the logs by means of a jack

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

[1] Engineer-in-charge, Saw & Pulp Mill Div., Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ladder side feed, the speed of which is synchronized with the infeeding buckhorn chain on the barker, works very well but requires more men on the feed end in the pond to keep every carrier link filled.

In some cases it is necessary to feed the logs directly from the yard on cars without the use of a pond but it is rather difficult to obtain a steady continuous feed of logs to the barker in this fashion, and the capacity of the machine is likely to be reduced.

Adjustments

While independent variable speed drives with convenient controls are provided to operate the bed rolls in the barker in order to adjust them to the proper speed for rotation and forward motion of the logs, it was found that in practice frequent adjustments are not necessary and are only changed at intervals when general wood conditions change. Most barkers operate with a fluted roll speed of 60 r.p.m. and the screw roll at 160 r.p.m.

It is important that operators pay close attention to the wear or cavitation on the nozzle tips in order that the full efficiency of the water jets is utilized as worn tips will cause the pressure water to spray thereby bringing about a loss of production and power.

Most of these barkers are now equipped with broached stainless steel or cast stainless tips to prolong their life and tips are now available made of a new material known as Norbide, which has proved under test to show practically no change in shape or cavitation after 6 months of service.

At times during the operation of the barker it becomes necessary to shut off the water pressure to clear a jamb which sometimes occurs, caused by very small or irregular shaped wood choking the machine and is generally cleared in a few minutes by means of barring through one of the side doors provided in the machine, and considerable delay is sometimes caused when starting up the pump with closed pressure valves. When this occurs it is generally necessary, except when using turbine drives, for the operator to descend to the lower floor, close the discharge valve on pump, throw in the starter, and when up to speed, open the discharge valves on pump. This takes considerable time and the use of a hydraulically operated pressure valve is recommended at the pump which is controlled by means of a pilot valve located at the front of barker convenient to operator. With this arrangement it is not necessary to shut off the pump motor at any time after starting and the pressure water jets can be cut in or out at will without shock, thereby saving considerable loss of time and also protecting the motor from undue input surge of current when starting.

The barker is equipped with a steel hopper below the machine to collect the waste water and bark, which is sluiced onto a low head vibrating screen with single or double deck or a dragtype conveyor. The double deck screen is used when it is necessary to recirculate the water and adding sufficient extra water for makeup purposes, which runs approximately 5% or 30 gallons per minute. It has been found that the bark tailed off of the vibrating screen when using yard stored wood contains approximately 51% moisture.

The barker requires 600 gallons of water per minute and when river water is used with excessive abrasive matter, it is necessary to pump it into a suitable settling tank with baffles to precipitate the solids. These tanks are engineered and designed to suit the water conditions.

White water can be used providing it does not contain too many solids or chemicals which will interfere with the operation of the pump unit.

Maintenance

The maintenance cost has proved to be very low compared with other types of barkers and the parts requiring replacement are mostly the baffle plates and chain drives.

The bed roll plates are made of cast steel and do not require resharpening oftener than 6 to 8 months. The edges on bed roll plates can be stellited at a small extra cost, which will materially increase their life.

The installation cost varies with each application as most of the barkers to date have been an addition to present equipment, but when considering a new installation, the cost of barker and pump foundation should not exceed approximately $8,000.00. To this would have to be added the cost of water piping and electric wiring.

As the demand for slab wood waste is becoming more active for pulping purposes, a barker has been designed to bark slabs and edgings which is now on order and under construction, and will be put into service within the next few months.

When pulpwood is brought to the mills in log form averaging from 12 to 30 inches in diameter and 20 feet in length, it is very desirable to bark these logs before slashing and splitting as considerable waste takes place in barking split wood. The Allis-Chalmers Company is developing and will market a unit for this purpose in the very near future.

Colloids

Interscience Publishers, Inc., has recently published a small volume entitled "Colloids—Their Properties and Applications" by A. G. Ward of England. (133 pp. 4¾ x 7).

This is the kind of book that will be welcomed by the average individual. In recent years there have been published many excellent accounts of the progress in colloid science. In general, these have necessarily all been of an advanced standard requiring a real scientific foundation for an easy understanding.

This is an attempt to cover the ground in a more elementary way and serves well as an introductory manual on the subject for those considering the subject for the first time.

Covered in this handy volume are such subjects as: the atomic structure of matter; surfaces; the colloidal state; suspensoids; emulsoids; gels and pastes; emulsions and foams; dusts, smokes and fogs; rubber; cellulose; proteins; clay; paints, lacquers and varnishes; detergency; and living matter.

Altogether, too rarely do books of this type appear, a book for the layman that explains a very complicated subject in a manner that can be understood. Even in fields dealing primarily with colloids there are few in companies from the president down to the sweepers who have or can easily obtain an understanding of the subjects that are so vital to their welfare. There should be more books like Ward's Colloids. They would be helpful to many who lack the background for comprehending advanced treatments.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York 17, N. Y. at $1.75 per copy.

Protein Feed From Sulphite Waste Liquor*

By Robert D. Walker Jr.[1] and R. A. Morgen[1]

Abstract

The sugar fraction of Florida sulphite waste liquor may be utilized in the production of Torula *yeast, a high protein material suitable for cattle feed. This may serve as a valuable adjunct to the already considerable citrus feed industry in Florida.*

Pretreatment of the liquor by liming is necessary, otherwise fermentations are slow and yields are low. Inoculum from wort agar slants or actively fermenting sulphite waste liquor is suitable. Approximately 90% of the reducing sugars is utilized in a 15-hour fermentation cycle and yields of 500 to 700 million yeast cells per ml., or up to 5% by volume, are consistently obtained.

Optimum growth conditions for a laboratory scale batch process using Torulopsis utilis var. thermophilia *are: pH=5.5 to 6.0; aeration=150cc. air per min. per liter of sulphite waste liquor (specific for size and shape of fermenter, and air diffuser); nutrients=2.0 grams $(NH_4)_2$ HPO_4 per liter; temperature=30 to 35°C. Foaming of the sulphite waste liquor, because of its surface-active properties, was overcome by the use of 0.1 to 0.2% Turkey red oil, which proved nontoxic to the yeasts whereas other effective antifoamers were extremely toxic.*

Wood is one of Florida's major natural resources and in recent years a considerable portion of this wood has been going into the pulp and paper industry. In the sulphite process approximately half of the wood, on a dry basis, is dissolved and lost with the waste liquors. These waste liquors are extremely complex but contain mainly sugars from hydrolysis of cellulose and lignin in the form of salts of lignosulphonic acids. They are important pollutional agents, it being estimated *(1)* that the waste liquors from 1 ton of sulphite pulp are approximately equal to the domestic sewage of 1500 persons. The waste liquors may, however, be considered from the viewpoint of the utilization of their constituents since they contain so large a portion of the original wood. It is estimated *(1)* that the total quantity of dissolved solids in sulphite waste liquors produced in the United States in 1937 amounted to 2 million tons. Of these solids, approximately 20% were present as reducing sugars and 60% as salts of lignosulphonic acids.

Numerous methods for the utilization of the ligneous fraction sulphite waste liquor have been devised *(2, 3, 4)* but, so far, none has offered the large scale, low price outlet which seems to be necessary for the solution of the sulphite waste liquor problem on a national scale.

The utilization of the carbohydrate fraction of sulphite waste liquor has also received considerable attention; microbiological proceses are generally favored since these sugars do not appear to be economically recoverable as such. Most of these investigations have been concerned with the fermentation of the sugars to ethyl alcohol and, indeed, in the Scandinavian countries and Germany a considerable quantity of sulphite waste liquor is utilized in this manner. In the United States, however, it is somewhat questionable as to whether alcohol from sulphite waste liquor can compete under normal conditions with that made from waste petroleum refinery gases or from fermentation of molasses.

The sugars in sulphite waste liquor consist primarily of pentoses and hexoses. The *Saccharomyces* yeasts which produce alcohol ferment only hexoses but other yeasts, such as *Torula,* will utilize both pentoses and hexoses. During the recent war *Torula* yeast was produced in both Germany and Sweden for human and animal consumption *(5, 6)*. In the United States the market for yeast for human consumption would appear to be limited but as an animal feed there seem to be localized possibilities.

In recent years the cattle industry has undergone marked expansion in Florida and the Southeastern States in general. The development of this industry in Florida has been discussed by May *(7)*. This expansion has come about for a number of reasons among which are the introduction of Brahma and pure strains of beef cattle and the elimination of the Texas fever tick. As a result a very considerable feed industry has arisen in Florida using waste peel and pulp from the citrus canneries. This makes an excellent cattle feed except that it is low in protein. The Southeastern States do not produce a sufficient quantity of protein to furnish an adequate diet for the animals now on hand; the perennial shortage is met by importation of high protein feeds, often at premium prices since this section is so far from the centers of production. Yeast, produced from Florida sulphite waste liquor, would not only furnish some of the necessary additional protein but also would supply important quantities of minerals and vitamins as is indicated in Table I. Thus the sugars of sulphite waste liquor might not only be utilized, with the consequent reduction of pollutional value, but a valuable product would result.

TABLE I.—TYPICAL ANALYSIS OF TORULA YEAST *(5)*

Protein, %	48
Fat, %	2
Carbohydrate, %	34
Mineral salts (principally phosphates and potassium salts), %	8
Water, %	8
Vitamins B_1, B_2, D, and Nicotinic Acid	

Materials and Methods

The sulphite waste liquor used in this investigation was obtained from the Fernandina, Florida, plant of Rayonier, Inc. All liquor was adjusted to blow-pit strength before fermentation. This liquor contains approximately 10% total solids of which 20 to 25% are total reducing sugars.

It is interesting to note in this connection that this sulphite liquor differs appreciably from other reported in the literature *(8)*. The most notable change from the viewpoint of this work is the very low percentage of free sulphur dioxide. Almost all of the sulphur is bound in the form of sulphated or sulphonated organic acids. Neither steam treatment nor application of low pressures will release appreciable amounts of sulphur dioxide. This difference makes a notable variation in the pretreatment of the liquor before fermentation and also offers an opportunity for recovery of this type of organic compound.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

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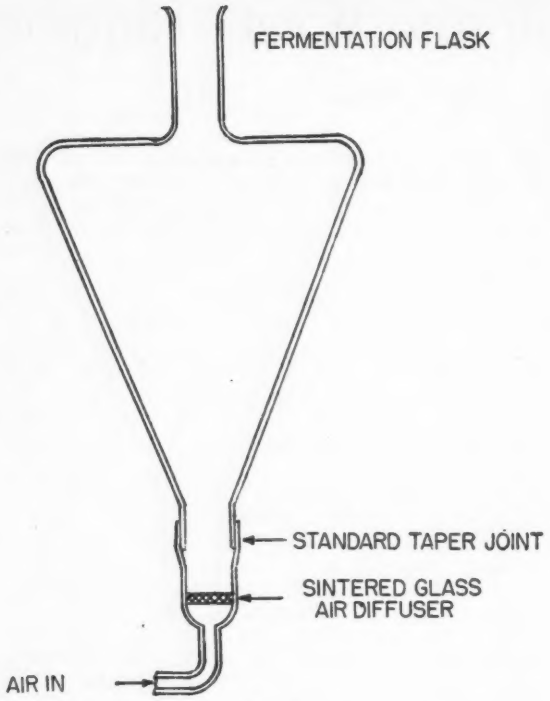

FIG. 1

Yeasts used were obtained from the Northern Regional Research Laboratory of the U. S. Dept. of Agriculture at Peoria, Ill. Cultures of *Torulopsis utilis var., thermophilia* and *Torulopsis utilis var. major* were tried. *Torulopsis utilis var. thermophilia* was used for most experiments since it seemed to make the best growth on the sulphite waste liquor under present conditions. Acclimatization of the yeasts to sulphite waste liquor appeared to be unsuccessful and inoculum was usually prepared on wort agar slants although inoculum from actively fermenting sulphite waste liquor was suitable. Approximately 1% inoculum was used.

The fermentation apparatus is shown in Fig. 1. Its essential features are (1) the air diffuser, a sintered glass disk of medium porosity, and (2) the shape of the fermenter which allowed good aeration as well as furnishing a large surface for foam disintegration.

Both pre-and post-fermentative sugar analyses were run on the sulphite waste liquor using the method of Shaffer and Somogyi *(9)*. In all of the primary studies these analyses were run on liquor samples delignified with basic lead acetate. Later, when they were used as more or less of a control procedure the analyses were made on unprecipitated sulphite waste liquor. The results obtained in these later analyses were measures of *total reducing matter* and not sugars but gave the desired information. *Total reducing matter* usually ran from 3.0 to 3.5% by weight as compared to *total reducing sugars* 2.0 to 2.5% (calculated as glucose).

Foaming

In view of the fact that yeasts require considerable volumes of air for reproduction, foaming of the sulphite waste liquor, because of its pronounced surface-active properties, presented a serious problem. In general, it was found that an increase in the efficiency of aeration resulted in an increase in rate of cell reproduction but was accompanied by a corresponding difficulty in controlling the foam. Numerous antifoam agents were tested for both defoaming properties and and toxicity to the yeasts. Detergents, in general, were reasonably good antifoamers and were not very toxic to yeasts in the quantities used. The higher alcohols, such as octyl and decyl, were good antifoamers but were very toxic to the yeasts. Turkey red oil in concentrations of 0.1 to 0.2% was quite effective in breaking the foam and appeared to be nontoxic to the yeasts. It was used in all subsequent fermentations.

Pretreatment

This particular raw sulphite waste liquor is not fermentable. A number of pretreatments were devised and are given as follows:

PT-1. Liquor neutralized to pH 5.0 with Na_2CO_3, the liquor settled and filtered from any precipitate. Since there is very little "free SO_2" present this treatment does little except to adjust pH and cause a slight precipitation of inorganic salts. The pH was later changed to 5.75 and an alternate procedure used lime instead of Na_2CO_3.

PT-2. Liquor neutralized to pH 10.5 with lime, settled and filtered (using filter aid) to remove the sludge; then neutralized to pH 3.5 with sulphuric acid and again filtered. This treatment should bring about a rather complete precipitation of inorganic constituents but little lignin precipitation.

PT-3. Liquor adjusted to pH 11.5 with lime, settled and filtered (using filter aid); then neutralized to pH 3.5 with sulphuric acid, filtered and used. This treatment results in a very considerable lignin precipitation and brings up serious problems of handling the precipitate which is very finely divided.

Products of all three pretreatments appear to have approximately the same sugar content (2.0 to 2.5%) but they differ markedly in their fermentation characteristics. Sulphite waste liquor treated by PT-1 is characterized by a long induction period (the period before yeasts start active multiplication) and a low maximum cell count. Liquor pretreated by PT-3 is readily fermentable, but greater ease of fermentation is more than offset by the difficulty of handling the precipitate in this treatment. All of the experiments here reported were run using sulphite waste liquor prepared by PT-2, except as otherwise noted.

In PT-2, liming to a pH of 10.5 appeared to increase the amount of precipitate in the first filtration only slightly over that obtained by liming to pH 5.0 (PT-1) but the liquor was more fermentable. The reasons for this phenomenon are not immediately apparent but may possibly be because of a detoxification of the liquors or to a release of the sugars into a more fermentable form.

Environmental Factors Affecting Yeast Growth

Four enviromental factors affecting both rate of reproduction and total yeast yield were studied. These were: (1) pH, (2) aeration, (3) nutrient concentration, and (4) temperature. Representative fermentation data for each series are given in Tables II, III, IV, and V. These same data are shown in Figs. 2, 3, 4, and 5. The curves were derived by the use of a logistic grid and, since this method is not very common, a word of explanation, may be in order.

Many life processes, including the growth of microorganisms in a confined space, proceed along the autocatalytic growth curve. In the early stages this curve follows the geometric (Malthusian) rate of growth. Beyond the point of about 5% of the ultimate population the curve reverses and approaches an upper asymptote in a reverse geometric manner; i.e., it covers one-half the remaining distance to the upper limit in each equal increment of time.

A special form of plotting paper has been designed by Prof. E. B. Wilson of Harvard University upon which the integrated sum of the ordinate values (i.e. the total members of organisms) will plot

as a straight line. This, however, is a per cent plot and it is necessary to assume, or find by trial, the ultimate value. If such a value can be found a linear plot results. Over or under-estimation of the limiting value results in curves which are convex or concave, respectively.

The data of Tables II, III, IV, and V were plotted on the logistic grid using various assumed maximum values. One of these maximum values gave the best straight line through the experimental points. By taking values directly from the straight line it was possible to construct a "derived fermentation curve" which best fitted the experimental data. The solid curves in Figs. 2, 3, 4, and 5 are "derived fermentation curves"; experimental points are also included as indicated in the legends.

One further point with regard to the figures has to do with the "lag" period of the growth curve. If it is desired that the straight line pass through the zero of time on the logistic grid very large limiting values of cell count (2 to 4 billion cells per ml.) have to be assumed in some cases. It seems more reasonable to assume that the reproduction does not at first follow the geometric growth law in these cases but that it does so after the cells become acclimated to their new environment, the "lag" period varying with experimental conditions. By this means a reasonable limiting value may then be assumed and approximately straight lines are obtained with varying "lag" periods.

TABLE II.—EFFECT OF "SETTING" pH ON YEAST GROWTH *

Hours Fermentation	pH = 4.0	Cell Count in Millions per Ml. 5.0	5.5	6.0	6.5	7.0
0	2–4	....	....	....	....	....
2	4.0	....	....	....	....	....
4	1.0	....	....	....	....	....
6	2.5	....	....	....	....	....
8	2.0	....	....	....	....	....
9	...	24.5	121.5	72.5	31.5	11.0
10	...	....	....	....	....	....
11½	1.5	....	....	....	....	....
12	...	78.5	251.5	149.5	73.0	11.0
14	...	152.0	....	....	....	....
15	...	....	384.0	298.0	137.0	10.5
16	...	311.0	....	....	....	....
18	...	....	386.0	540.0	196.0	25.0
20	...	....	....	....	....	35.5
23	1.5	....	....	....	....	....
24	...	....	420.0	....	345.0	29.0

* Other conditions were: aeration = full rolling boil; nutrient salt concentration = 1.0 gram $(NH_4)_2$ HPO_4 per liter; temperature = 30° C.

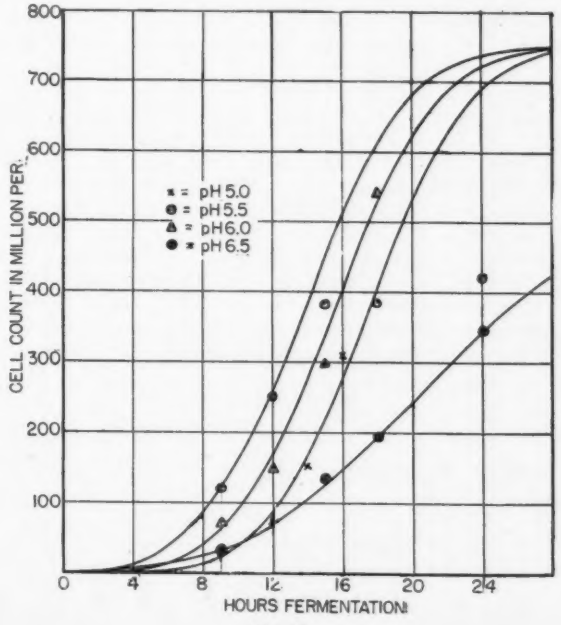

FIG. 2

Effect of "Setting" pH on Yeast Growth. Solid Curves are "Derived" Curves

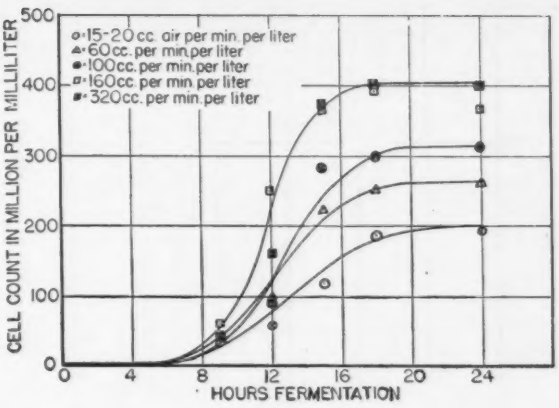
CELL COUNT IN MILLION PER MILLILITER
o-15-20 cc. air per min. per liter
△-60 cc. per min. per liter
●-100 cc. per min. per liter
□-160 cc. per min. per liter
■-320 cc. per min. per liter
HOURS FERMENTATION

FIG. 3

Effect of Aeration on Yeast Growth. Solid Curves are "Derived" Curves

EFFECT OF pH

The effects of pH on the growth of microorganisms are pronounced and so widely known that it is not proposed to discuss them here except to remark that yeasts in general appear to grow best in somewhat acid media (pH 4.0 to 6.0), and to note that the allowable limits of pH are somewhat dependent on such factors as type of medium and presence of toxic substances.

Since pH was the first environmental factor studied, purely arbitrary choices had to be made with regard to other factors. These were as follows: aeration = full rolling boil (no method of quantitatively measuring aeration was then in use); nutrient salt concentration = 1.0 gram $(NH_4)_2$ HPO_4 per liter of sulphite waste liquor; temperature = 30°C. The data are given in Fig. 2 and Table II.

The data in Fig. 2 indicate that a pH of 5.5 to 6.0 is the most suitable. Curves for pH 5.0, 5.5, and 6.0 seem to have approximately equal slopes but differ in length of "lag". The curve for pH 5.5 appears to be seriously influenced by death of cells after about 14 hours fermentation. pH 5.5 has a distinctly shorter "lag" period but pH 6.0 always seems to produce higher final cell counts. Possibly the total protein produced would be a more reliable ordinate than cell count, for it is apparent from subsequent figures that death of cells may be an important factor in the falling off of the growth rate in a number of fermentations. A pH of 5.75 was used as the standard pH for later experiments with other environmental factors. A recheck of the optimum pH after the determination of optimum values for other factors confirmed the fact that pH 5.5 to 6.0 gives maximum yields.

TABLE III.—EFFECT OF AERATION LEVEL ON YEAST GROWTH *

Hours Fermentation	15-20 cc. air per min.†	30 cc. air per min.	60 cc. air per min.	100 cc. air per min.	160 cc. air per min.	320 cc. air per min.
	Cell Count in Millions per Ml.					
0	2–4	...	...	...	...	...
9	33.5	77	60.5	33	65	41
12	59	140	98	91	251	158
15	117	164	222	284	366	370
18	185	165	250	299	392	396
24	192	185	261	312	366	401

* Other conditions were: pH = 5.75; nutrient salt concentration = 1.0 gram $(NH_4)_2$ HPO_4 per liter; temperature = 30° C.
† Air volumes given per liter of fermentation medium.

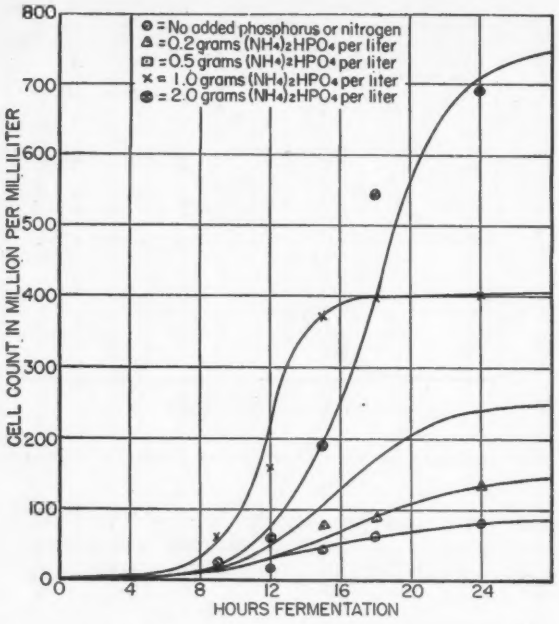

FIG. 4

Effect of Nutrient Concentration on Yeast Growth. Solid Curves are "Derived" Curves

The fermentation data on the pH series may be briefly summarized as follows:

pH	Indicated Maximum Cell Count, million per ml.	Indicated Lag Period, hr.	Time to Reach 50%, hr.	Time to Reach 90%, hr.
5.0	750	5	18	24
5.5	750	1	14	20
6.0	750	3	15	22
6.5	500	0	20	ca 30

EFFECT OF AERATION

The whole process of aeration in yeast production has been very fully discussed by de Becze and Liebman *(10)*. The effects of aeration may be ascribed to at least two sources: (1) agitation, and (2) aeration itself, which probably involves the oxygen supply to the cells. Yeasts are nonmotile microorganisms and any nutrients must diffuse into the cell through the cell wall. Adequate agitation will, of course, materially reduce the effective thickness of the diffusion layer.

The biochemical mechanism of aeration is very incompletely understood. It is generally believed that air is important chiefly as dissolved oxygen, but the facts do not seem to agree entirely with this view. Wilkie and Prochaska *(11)* have shown that pure oxygen is not as good a growth stimulant as air, and numerous other investigators *(12, 13, 14)* have been able to propagate yeasts in the absence of aeration. These experiments were confined to *Saccharomyces cerevisae* and for that reason these results may have little meaning when applied to *Torula* yeasts. Our experience with *Torula* yeasts on sulphite waste liquor indicated that an increase in the efficiency of aeration has invariably resulted in a marked increase in both rate of growth and maximum cell count.

The fermentation data for the aeration series are shown in Fig. 3 and Table III. Experimental conditions for this series were: pH = 5.75; nutrient salt concentration=1.0 gram $(NH_4)_2 HPO_4$ per liter of sulphite waste liquor. These data illustrate in a striking manner the necessity of adequate aeration. The curves of Fig. 3 indicate that both rate of growth and maximum cell count are dependent on the aeration level.

The effects of aeration level on yeast growth as shown in Fig. 3 may be summarized as follows:

Aeration Level, cc. per min. per liter	Indicated Maximum Cell Count, million per ml.	Indicated Lag Period, hr.	Time to Reach 50%, hr.	Time to Reach 90%, hr.
15-20	200	6	14	17
30	188	0(?)	10	17
60	262	6	13	17
100	315	6	11	15
160	405	6	13	15
320	405	6	13	15

EFFECT OF NUTRIENT SALT CONCENTRATION

For reproduction yeasts require sources of phosphorus and nitrogen as well as carbon and oxygen. Dibasic ammonium phosphate was chosen as a suitable agent for providing both nitrogen and phosphorus in a form available to the yeasts. A few fermentations were run in which urea and potassium dihydrogen phosphate were used as nutrient salts and the data from one of these are given in Table IV. The experimental conditions were as follows: pH = 5.75; aeration = 150 cc. air per min. per liter of sulphite waste liquor; temperature=30°C. A representative series of the fermentation curves are shown in Fig. 4. These indicate in a notable manner the effect of nutrient salt concentration on both the rate of reproduction and maximum cell count. These data may be summarized as follows:

$(NH_4)_2 HPO_4$ Concentration, g. per liter	Indicated Maximum Cell Count, million per ml.	Indicated Lag Period, hr.	Time to Reach 50%, hr.	Time to Reach 90%, hr.
0.0	100	0	16	26
0.1	125	0	12	21
0.2	150	3	12	19
0.5	250	6	16	22
1.0	405	6	13	15
2.0	750	6	17	21

EFFECT OF TEMPERATURE

At low temperatures yeasts fail to multiply; at high temperatures they are killed. In between these two limits the rate of reproduction bears a definite relation to the temperature. Other factors, such as autolysis of the yeasts, may intervene and affect the final yield. It therefore is of importance to determine the temperature range of optimum yeast production. Very early in this work it was found that *T. utilis var. thermophilia* grew slowly at temperatures of 25°C. or lower. It was therefore decided to run fermentations at 30, 35, and 40°C. Other conditions were: pH = 5.75; aeration = 150 cc. air per min. per liter of sulphite waste liquor; nutrient salt concentration=2.0 grams $(NH_4)_2 HPO_4$ per liter of sulphite waste liquor. The results are shown in Table V and Fig. 5. They indicate that a temperature range of 30 to 25°C. is suitable. Temperatures in excess of 35°C. are liable to seriously diminish yeast production while temperatures of less than 30°C. result in appreciably slower growth than in the above named temperature range. As for the 30 and 35°C. fermen-

TABLE IV.—EFFECT OF NUTRIENT CONCENTRATION ON YEAST GROWTH *

Hours Fermentation	Cell Count in Millions per Ml.								
		$(NH_4)_2 HPO_4$							0.50 g. KH_2PO_4
	No Nutrient	0.1 g.	0.2 g.	0.5 g.	1.0 g.	2.0 g. added intermittently	2.2 g. added intermittently	10.0 g. added intermittently	0.50 g. urea
0	2–4	....	....	....	....	....	....	....	....
9	24	44.5	15	14	41	22	7	14.5	8
12	16.5	69	26	40	158	54	54	18.5	78.5
15	42	92	79	152.5	370	187	160	23.5	137
18	64	74.5	88	171	396	542	356	36	543
24	....	....	134	235	401	690	476	79	485

* Other conditions were: pH = 5.75; aeration = 150 cc. per min. per liter; temperature = 30° C.

tation curves, the 35° curve appears to have an appreciably shorter lag period than the 30° curve but the final yield of yeast seems to be less in that death of cells appears to intervene in the 35° fermentation. These fermentations may be summarized as follows:

Temperature,	Indicated Maximum Cell Count,	Indicated Lag Period,	Time to Reach	
			50%,	90%,
° C.	million per ml.	hr.	hr.	hr.
30	800	6	17	23
35	800	0	15	22

Optimum Fermentation Conditions

Optimum fermentation conditions for *Torulopsis utilis var. thermophilia* were chosen from the data of Figs. 2, 3, 4, and 5. They are: pH=5.75; aeration=150 cc. air per min. per liter of sulphite waste liquor (specific for shape and size of fermenter, and air diffuser); nutrient salt concentration=2.0 grams $(NH_4)_2$ HPO_4 per liter of sulphite waste liquor; temperature=30 to 35°C.

Yeast Yields and Sugar Utilization

The course of these fermentations has been followed by making yeast cell counts and by centrifuging small volumes of the fermenting liquor and noting the volume of yeast settled out. Cell count and yeast volume are suitable indications of the trend of a fermentation and were adequate for the purposes of these experiments but the yield eventually must be placed on a weight basis.

Cell counts of 500 to 700 million per ml. and yeast volumes of 3 to 5% have been consistently obtained using the specified conditions in a 15 to 24 hour fermentation cycle. It should be stated here that approximately 1% inoculum was used and that a larger inoculum should result in an appreciably shorter fermentation cycle.

Post-fermentative sugar analyses have shown sugar concentrations of 0.1 to 0.3%. Since the initial sugar concentrations were 2.0 to 2.5% this amounts to approximately 90% utilization of the sugars. Thus sugar utilization is reasonably complete and yeast yields high under the conditions given.

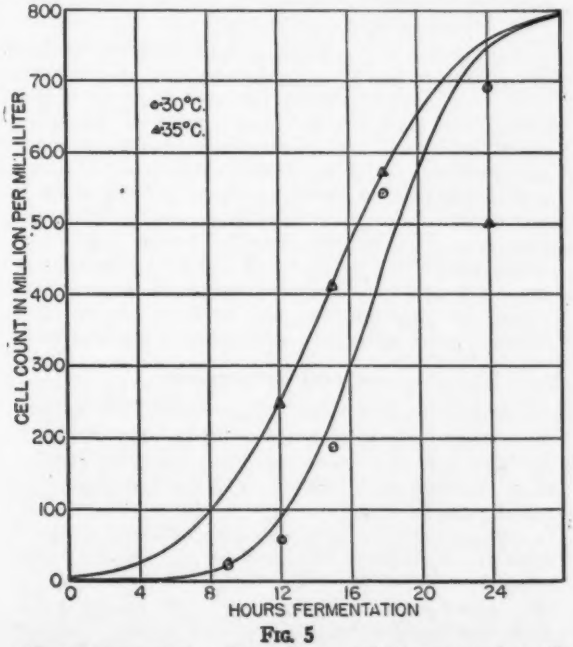

FIG. 5

Effect of Temperature on Yeast Growth. Solid Curves are "Derived" Curves

TABLE V.—EFFECT OF TEMPERATURE ON YEAST GROWTH *

Hours Fermentation	Cell Count in Millions Ml.		
	30° C.	35° C.	40° C.
0	2–4	2–4	2–4
9	22	...	...
12	54	248	4.5
15	187	412	6.5
18	542	569	6.0
24	690	500	...

* Other conditions were: pH = 5.75; aeration = 150 cc. per min. per liter; nutrient salt concentration = 2.0 grams $(NH_4)_2$ HPO_4 per liter.

Summary

Florida and other Southeastern States are in need of additional sources of protein to furnish an optimum diet in both the cattle and poultry industries. The expected continued expansion of these industries can only result in accentuating these dietary problems. On the other hand, wood going into the pulp and paper industry is only being utilized to the extent of about 50% of its weight. The sugars present in the waste liquors of the sulphite mills can be utilized to produce yeasts. Thus a material now being wasted may be converted into a valuable product for which there should be a ready local market.

The sulphite waste liquors obtained from the cooking of southern pine are different in composition from those obtained from other sources. The percentage of bound sulphur is much higher and only a minor amount of sulphur dioxide can be recovered by either steaming or evacuation.

The process of producing yeast utilizes more than 90% of the reducing sugars with the production of negligible quantities of ethyl alcohol. The present experiments have not been conducted on a large enough scale to gage the economics of the process.

It appears that the aeration costs will be a determining factor in the completed process. It is planned to study the yeast production on a large enough scale to determine the factors involved in proper aeration. Results of these and other tests will permit the calculation of a reasonable economic balance.

Literature Cited

1. Sutermeister, Chemistry of Pulp and Paper Making, 3rd ed., p. 205.
2. Keeth, G., *Trans. Am. Soc. Mech. Engrs.* 66: 679-83 (1939).
3. Howard, G. C., *Modern Plastics* 17, 96, 130, 132, 134, 136 (1939).
4. Howard, G. C., *Paper Mill* 62: 70-2 (1939).
5. Roseqvist, S. O., *Food Ind.* 16, No. 6: 74 (1944).
6. Report No. 201, Office of the Publication Board, Dept. of Commerce, Washington, D. C.
7. May, W. D., Bulletin No. 8, Florida Eng. and Industrial Experiment Station (1945).
8. Partansky, A. M., and Benson, H. K., *Paper Trade J.* 102, No. 7: 29-35 (1936).
9. Shaffer, and Somogyi, *J. Biol. Chem.* 100: 695-713 (1933).
10. de Becze, G., and Liebman, A. J., *Ind. Eng. Chem.* 36: 882-90 (1944).
11. Wilkie, H. F., and Prochaska, J. A., Fundamentals of Distilling Practice, Jos. E. Seagram & Sons (1943).
12. Jansen, S., British pat. 366,753 (1932).
13. Meyer, A., Dutch pat. 8,368 (1921).
14. Weleminsky, F., and Butschowitz, E., *Zent. Bakt. Parasitenk* II, 78: 178-91 (1929).

TAPPI Notes

R. H. Stevens is now technical director, and Karl M. Guest is now chief chemist for the National Container Corporation, Jacksonville, Fla.

Frederick W. Taylor, formerly with the Chain Belt Company, Atlanta, Ga., is now general manager of the Augusta Iron Works, Augusta, Ga.

Paul A. Laurence, formerly of the Chemical Lining Engineers, Inc., is now president of Paul A. Laurence Company, Builders Exchange, Minneapolis, Minn.

Natalio Neumann, director of La Fabrica de Papel Avellaneda, Buenos Aires, Argentina, is visiting mills in the United States. His son Norberto has just completed his studies in pulp and paper at the University of Maine.

Properties Of Saran Coating Latex*

By G. W. Stanton[1] and W. A. Henson[1]

Abstract

Applications, formulation techniques, and physical properties are presented for a newly developed Saran coating latex. It is characterized by ease of application, rapid drying, low cost, and the outstanding qualities of the resultant coatings. In keeping with the characteristics of the saran family of resins, these coatings exhibit high gloss, clarity, toughness, fireproofness, interesting coloring and pigmenting possibilities, and a high degree of resistance to water, acids, alkalies, oils, and organic solvents.

The saran resins are prominent among thermoplastics for their versatility. The unusual combination of properties exists through a wide range of polymer structure from crystalline, fiber-forming molding powders to amorphous, readily soluble coating resins, thus they are adaptable for use in a broad field of applications. This coating latex furnishes an additional means of making use of the qualities of these resins, namely, through their use as film-forming and coating compositions in which water is the dispersing and carrying phase. This eliminates the costs, toxicity, and fire-hazards which accompany the use of organic solvents formerly required for the application of similar coatings. Due to the absence of chemical affinity between the two phases in the latex, the problems of solvent retention is eliminated and complete drying is readily accomplished.

Because of its ability to handle water coating systems, the pulp and paper industry is inherently capable of applying latex coatings. Many machines designed to apply mineral coatings and color pigments to paper have been found suitable for applying and drying latex, but the use of the latex need not be confined to the coating field. Such properties as wet strength, oil and grease resistance, vapor permeability, and tear resistance may be improved by incorporation of the latex in the fiber furnish.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

[1] Experimental Polymerization Div., The Dow Chemical Co., Midland, Mich.

Because of the inherent ability of the pulp and paper industry to handle water coating systems, a film forming latex may be readily utilized in standard operations. The development of a Saran coating latex suitable for use by the industry greatly broadens the possibilities and opportunities for the preparation of functional papers having new and unusual properties.

The Saran resins are prominent in the field of thermoplastics for their high degree of resistance to a wide variety of chemicals and their very low rates of transmission of gases and vapors as well as for their excellent mechanical properties and fireproofness. These properties exist through a wide range of polymer structure from crystalline, fiber-forming molding powders to amorphous, readily soluble coating resins which permits their utilization in a variety of applications. The solvent soluble Saran resins are finding their place in the general coating fields where the above combination of properties is required and where volatile, inflammable solvents can be employed. Saran coating latex furnishes an additional means of making use of the qualities of these resins, namely, through their use as film-forming coating compositions in which water is the only dispersing and carrying phase. This eliminates the costs, toxicity, and fire-hazards which accompany the use of organic solvents formerly required for the application of similar coatings. Because of the absence of chemical affinity between the two phases in the latex, the problem of solvent retention is eliminated and complete drying is much more readily accomplished.

Many types of machines designed for the application of mineral coatings and color coatings to paper have been found suitable for applying and drying latex. Such machines are now capable of producing papers which combine the properties of high gloss, and good heat sealability with resistance to oil, water, and chemicals thus enabling them to be utilized in new markets for their producers. In addition the latex need not be confined to the coating field. Such properties as wet strength, oil and grease resistance, vapor permeability, and tear resistance may be improved by incorporation of the latex in the fiber furnish or on saturating or impregnating machines.

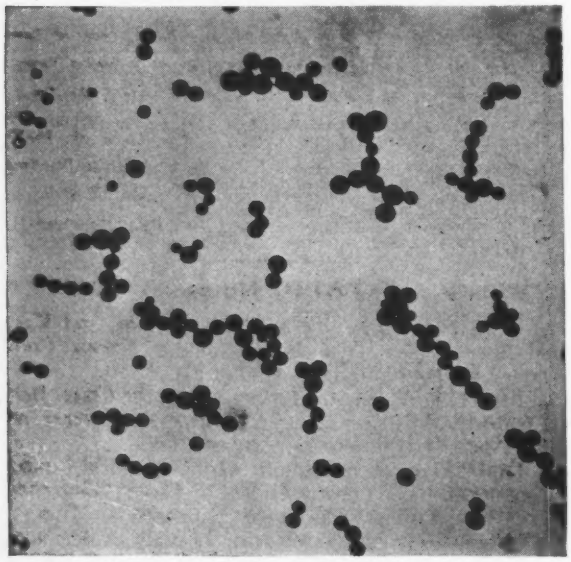

FIG. 1

The Particle Size and Size Distribution of the Solid Saran F-122 Resin Dispersed in the Aqueous Phase as Magnified ×35000 Using an RCA Type B Electron Microscope

General Properties

The Saran coating latices are colloidal dispersions of solid polymer in water. As can be seen in Fig. 1, the particle size is very uniform and small ranging from approximately 0.008 to 0.15 micron. The solids content can be made as high as 60% without sacrifice of particle size or distribution. Figures 2 and 3 show the variation of specific gravity and viscosity, respectively, with increasing solids content. The specific gravities were determined with standard hydrometers and the viscosities by the capillary method.

The coating latices are somewhat sensitive to co-

agulation by electrolytes and water miscible organic liquids as indicated in the following table:

Sample (100 grams)	Milliliters of 5% Salt Solution Required to Produce Faint Trace of Coagulation			Pure MeOH, ml.
	NaCl	$MgCl_2$	$Al_2(SO_4)_3$	
Unplasticized latex	44	10.5	2.5	75
25% Plasticizer in latex..	2+	0.4	0.1	5

These concentrations are much higher than need be encountered in normal practice. Infinite dilution of the latex with hard water produces no coagulation or unstabilizing effects.

In common with other water dispersions the Saran latices show greater stability in contact with certain metals than with others. Listed below in order of preference are representative metals found to be satisfactory for processing and handling the latices (pH adjusted between 5 and 8):

Stainless steel	Brass
Chromium	Nickel
Tin	Aluminum
Bronze	

Metals such as black iron and mild steels which are quite readily corroded are unsatisfactory; however, these surfaces are satisfactory if coated with a water impermeable finish, such as one of the Saran coating resins in the form of a latex or in organic solvent solution.

The pH of the latex as normally furnished is in

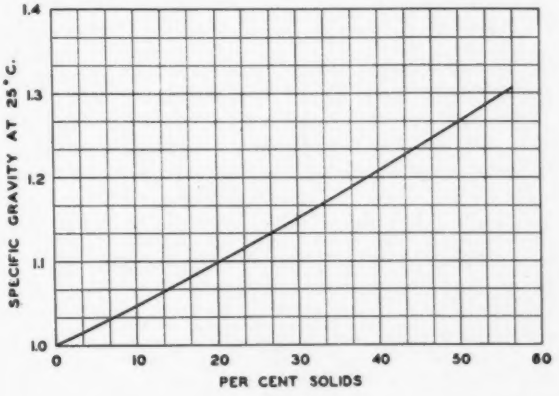

FIG. 2

Increase in Specific Gravity of the Latex as the Solids Content is Varied through the Range 0 to 57%

the range 6.5 to 7.5. This may be raised by addition of ammonia to 12 although some discoloration may occur in the higher range. Likewise, the pH may be lowered to 2 by addition of a monobasic acid such as hydrochloric or nitric; coagulation begins at a pH below 2.

Formulation Techniques

No extraordinary technique is required for incorporating various ingredients into the latices. Any precautions to be observed are the same as would be employed in handling any colloidally dispersed system.

The viscosity of the latex usually marketed, Fig. 3, is approximately 22 centipoise at 57% solids. This can be raised to any desired viscosity by the addition of very small amounts of available thickeners, typical examples being hydroxyethyl cellulose, carboxymethyl cellulose sodium salt, and sodium or ammonium alginate. As the viscosity is increased by addition of thickener, some degree of thixotropy is encountered which makes accurate determination of viscosity by the capillary method impossible. Several

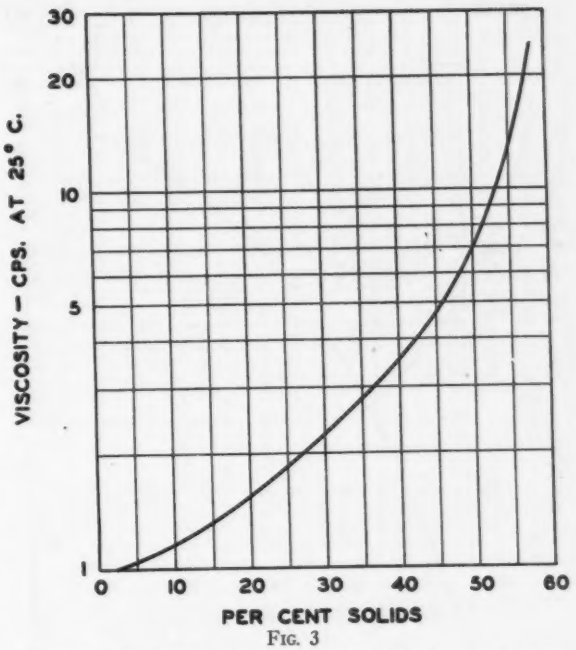

FIG. 3

Increase in Viscosity of the Latex as the Solids Content is Varied through the Range 0 to 57%

types of viscosimeters are available which measure viscosity by the drag exerted against a rotating spindle which is immersed in the liquid and driven at constant speed or constant torgue. The Brookfield Syncro-Lectric Viscosimeter, which operates on the above principle has been found satisfactory for determination of viscosities of thickened latices and was used for all such determinations in this work.

Figure 4 shows the increase in viscosity produced by the addition of increasing concentrations of thickening agent to a 57% solids latex. In this example the thickening agent employed was 100 centipoise type hydroxyethyl cellulose added as a 10% aqueous solution. The concentrations are expressed as hydroxyethyl cellulose solids based on total latex solids. The viscosity of the latex may be readily increased to approximately 5,000 centipoise by the addition of small concentrations of thickener. Higher viscosities show marked thixotropy and poor flow characteristics and are therefore less applicable to most coating operations.

Hydroxyethyl cellulose is available in various viscosity types ranging from 10 to 500 centipoise measured as a 5% aqueous solution at 25°C. At a given concentration a higher viscosity type hydroxyethyl cellulose produces a higher latex viscosity. The data

TABLE I.—CHEMICAL RESISTANCE OF SARAN F-122 FILM CONTAINING 20% DIBUTYL PHTHALATE, CAST FROM LATEX

Material	Appearance	Physical Properties
HCl (conc.)	Slight haze	No change
HCl (10%)	Slight haze	No change
HNO_3 (conc.)	Opaque, white	Slight loss of flexibility
HNO_3 (10%)	Opaque, white	No change
H_3PO_4 (syrupy)	Hazy, cloudy	No change
H_3PO_4 (40%)	No change	No change
NaOH (30%)	Black	Brittle
NaOH (10%)	Brown, transparent	No change
NaCl (saturated)	No change	No change
Acetic acid (glac)....	Slight haze	Slight loss of flexibility
Ethanol (95%)	Slight haze	Slight loss of flexibility
Turpentine	No change	Slight loss of flexibility
Peanut oil	No change	No change
Petr. naphtha (100-140° C. BR)		Slight loss of flexibility
CCl_4	No change	Slight loss of flexibility
Methyl ethyl ketone...	.....	Dissolves
Butyl acetate	.....	Softens
Toluene	No change	No change

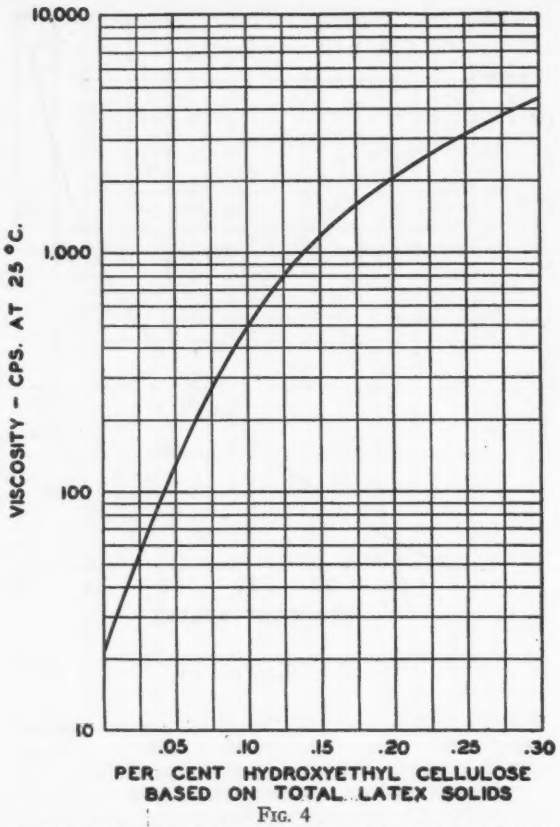

FIG. 4

Increase in Viscocity of a Latex Containing 57% Solids with Increasing Concentrations of Hydroxyethyl Cellulose Solids Based on Total Latex Solids

shown in Fig. 5 were obtained by adding a 0.2% concentration of various viscosity types of hydroxyethyl cellulose to a 57% solids latex and determining the resulting viscosity. The plot shows the relatively lower efficiency of the viscosity types above 200 centipoise.

The addition of plasticizers, stabilizers, resins and other water insoluble compatible materials is best accomplished by emulsifying the addition agent. A few typical suitable emulsifying agents are as follows:

Name	Chemical Type
Aerosol MA	Sodium hydrocarbon sulphonate
Alkanol WXN	Dihexyl ester of sodium sulpho-succinic acid
Aquarex D	Lauryl and myristyl sulphates
Daxad 11	Polymerized sodium salt of alkyl naphthalene sulphonic acids (alkyl short chain)
Duponol ME	Alkyl sulphate
Naccolene F	Modified alkyl aryl sulphonate
Nopco 1156	Sulphonated natural oil
Triton 720	Sodium salt of aryl alkyl poly-ether sulphonate

A variety of plasticizers have been found suitable either singly or in combination for use with the latices thus furnishings a wide range of formulations to meet a given combination of requirements. Those found to be most widely useful are organic esters of phthalic, glycollic, sebacic, and phosphoric acids.

Water soluble materials such as dyes, lubricants, corrosion inhibitors, etc. may be added as water solutions or stirred directly into the latex. Caution must be observed as to the electrolytic nature of the addition agent since excessive electrolyte content disturbs or coagulates such colloidal systems, as discussed under general properties.

Water insoluble extenders and modifiers such as pigments, fillers, clays, etc. can best be incorporated in the form of water slurries or pastes. Many water dispersible carbon blacks, pigments, clays, etc. are available from pigment manufacturers and distributors.

In general it may be said that for incorporating water emulsions, slurries, and pastes, those methods will be most successful which produce the most uniform and smallest particle size.

A typical formulation for a coating composition to deposit a colorless, glossy, transparent, flexible finish on paper, cloth, wood, etc. is as follows:

100 parts Saran latex (57% solids)
23.8 parts dibutyl phthalate emulsion (60% dibutyl phthalate)
1.7 parts hydroxyethyl cellulose solution (5% solids)

The coating air dries rapidly. No elevated temperature is required to produce a continuous film having excellent moisture and chemical resistance.

Physical Properties

Free films were prepared from commercially available Saran F-122 latex by adding 5 to 25% of plasticizer in water emulsion and sufficient thickener to give a good casting viscosity, approximately 1,000 centipoise. The latex was then poured onto a glass plate, knifed evenly over the surface and allowed to air dry until clear. Films containing 15% or less of plasticizer will show improved physical properties if heated a few minutes at 100° to 110°C.; those containing more plasticizer are not markedly improved by heating. Clarity of film, however, indicates complete removal of water; this is confirmed by analyses showing air dried clear films to contain 0.01% or less of water. The film after drying was then stripped from the glass plate for testing.

The data following were determined on films approximately 0.002 inch thick.

The tensile strength and elongation were determined with a Scott IP-4 Tensilgraph at 25°C. and 50% relative humidity using samples 1 inch wide by 2 inches long. These results show good agreement with those obtained on films deposited from solution in organic solvents when the plasticizer content is 15% or higher. The curves obtained from the latex cast films indicate nearly constant tensile strength and a rapidly increasing percent elongation from 5 to 15% plasticizer as shown in Fig. 6.

The moisture vapor transmission was determined by the General Foods method; i.e., the test sample is sealed as a diaphragm over the open top of a cup containing a desiccant, and air at 100°F., 95% R. H. is circulated around the cup. The amount of moisture transmitted through the sample is measured by the weight increase and calculated to some standard unit weight/unit area/unit time. Figure 7 shows the variation of moisture vapor transmission with film thickness for films cast from latex containing 15% dibutyl phthalate. The transmission is very nearly inversely

TABLE II

Test	Dibutyl Phthalate in Film, %		
	15%	20%	25%
Block temperature (1 lb./sq. in. for 1 hr.)	>110° C. (230° F.)	100° C. (212° F.)	80° C. (176° F.)
Heat seal temperature (continuous belt sealer 15 ft./min.)	130° C. (266° F.)	115° C. (239° F.)	95° C. (203° F.)
Elmendorf tear	100	850	Too elastic
Fold endurance (cycles)	85000	176000	.....
Per cent light transmission through 3 mil. film (4000 A)	77.0	69.0	62.5
(5000 A)	86.0	81.5	78 0
(7000 A)	89.5	89.0	86.5

proportional to the film thickness over the range 0.5 to 6.0 mils film thickness according to the following equation:

$$T = \frac{2.6}{t}$$

where T is moisture vapor transmission in g./100 sq. in./24 hr, and t is film thickness in mils (0.001 inches).

Chemical resistance was determined by suspending strips of free film, containing 20% dibutyl phthalate, partially immersed in the test liquid for 2 weeks at 25°C. The strips were removed and examined visually and manually by pulling, tearing, and folding. The results are given in Table I.

The effects of plasticizer on other physical properties may be seen in Table II.

Block temperature was determined by folding a strip of cast film lengthwise upon itself, applying a load of 1 lb./sq.in. upon the film and placing the sample in a forced draft hot air oven for 1 hour. The temperature at which the film adhered to itself sufficiently that marring or defacing resulted from pulling the halves apart is considered the block temperature.

Heat seal temperature was determined on the continuous belt Saran sealer in which the sample to be sealed is carried between two continuous belts through a heated zone and a cooling zone. The heat seal temperature is taken as that temperature which produces a seal stronger than the film surrounding it.

Elmendorff tear tests were run on the standard tester of that name and by the recommended technique.

Fold endurance was determined at 25°C., 50% R.H. using the Tinius Olsen Model 31633 and with the recommended technique.

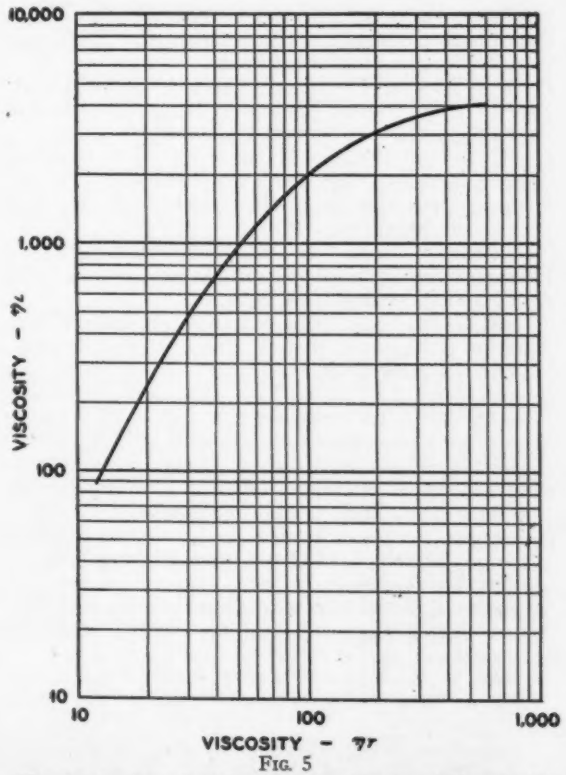

FIG. 5

Viscosity of a Saran F-122 Latex, Produced by the Addition of 0.20% of Various Viscosity Grades of Hydroxyethyl Cellulose

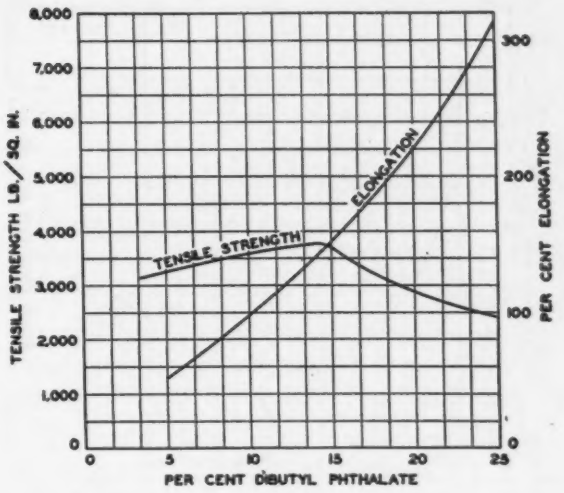

FIG. 6

The Two Curves Indicate the Manner in which the Tensile Strength and Elongation of Latex Cast Free Films Vary with Plasticizer Content

Light transmission was determined with the General Electric Recording Spectrophotometer.

Use Applications

PAPER COATING

The application of Saran latex to paper and paperboard contributes a number of extremely valuable protective and functional properties to this base material. These have been briefly mentioned above and include oil and greaseproofness, chemical resistance, waterproofness, gloss and heat sealability. The degree of protection required generally dictates the amount of coating to be applied in individual instances. The application of approximately 0.5 mil coatings will, in general, be sufficient for most uses since this amount provides for a continuous protective film. Its application is usually carried out as a converting operation by spray, roller, or spread coating methods. The required coating viscosity is easily adjusted to suit the particular machine application as described in the previous section under thickening. The unthickened latex is generally satisfactory for use with spray coaters, whereas roll coating performance is improved by the addition of a small amount of thickener. A general viscosity range of between 1000 to 2000 cp. produced by the addition of 0.1 to 0.2% of hydroxyethyl cellulose is recommended. The increased viscosity obtained measurably improves wetting and leveling. For knife or spread coating applications, a greater amount of thickener should be used to obtain maximum latex viscosity.

The coated paper should be passed through a heated drying tunnel or festoon inasmuch as the coating passes through a tacky stage before the complete removal of water. It cannot, therefore, be successfully applied to the size press of the paper machine since contact with the driers would cause sticking. This would also be true of water box calender applications on the paper or paperboard machine. The drying operation should be similar, therefore, to that used on mineral coated and solvent lacquered papers in that the surface is left undisturbed during solvent removal.

For most paper coating applications, it is best to use a hard sized fairly closed sheet. This promotes coating economy by retaining the maximum amount

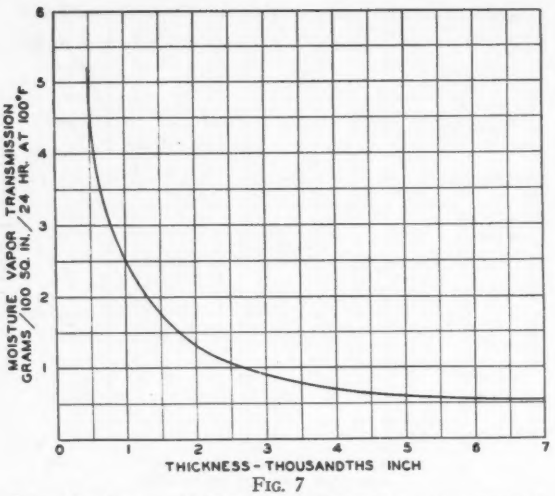

FIG. 7

Decreasing Rate of Moisture Vapor Transmission with Increasing Film Thickness

of dried latex film on the paper surface. The viscosity of the latex also greatly influences penetration and maximum body of the latex should be maintained consistent with the optimum performance of the particular coating applicator.

Saran F-122 latex coatings are indicated for greaseproof applications on various types of paper and paperboards. The excellent mechanical properties of the film, particularly those that have been plasticized, provide a flexible barrier which will withstand folding and scoring operations. This, together with their heat sealing properties, provides a convenient means of fabricating hermetically sealed envelope type bags for packaging greasy products of various types. Corrosive chemicals and the like can similarly be safely packaged. These coatings are equally suitable for application to protective food packaging papers since they are sufficiently odorless and tasteless.

The waterproof nature of the dried latex coating is useful for providing protection to water for wallpapers, shipping containers, gummed tape backings and specialty products. Its application to paper twine and fiber cord markedly increases its strength and durability by reason of the deposited plastic film. Woven paper cord thus treated is easier to clean and more resistant to soiling.

Latex coated paper is suited for cap liners where water vapor impermeability requirements are not too severe. Its solvent and chemical resistance are particularly suited for specialized applications in this field.

Molded pulp articles are easily sprayed or dipped by this latex to provide a tough, attractive, durable coating. Fiber pails may be sprayed or slush coated as a convenient means of providing water and grease proofness. Fiber wallboard protected with latex coatings are made washable and moisture vapor resistant.

Additional Uses

The coating latices have been found useful in a broad range of applications. As coatings on cloth, leather, plastics, and foils they provide heat-sealable finishes of excellent appearance resistant to water, greases, oils, and a wide variety of chemicals, and exhibit low rates of vapor transmission.

As base resins for water paints these latices appear extremely promising. Among the outstanding characteristics for this application are the very rapid drying rate of successive coats, and the resistance to scrubbing after a 1 hour drying period. This is of particular interest to bakeries, laundries and breweries where the rapid application of a maintenance paint having good resistance to water is paramount. The finish may be applied by either brushing or spraying.

Free films and tapes cast from the latices are of interest in the packaging field.

Excellent adhesives ranging from rigid to flexible have been prepared for cloth, leather, conveyor belts, belt drives, etc. and have shown high strength and durability in use.

Other uses include binders for materials such as cork, clays, mica, yarn flocs, etc. for use as insulation, wallboard, and floor coverings.

Because of the recent introduction of this type of latex and allocations restricting its use to the war effort, the wide and varied fields of application are as yet unexploited. Development work is continuing to provide improved formulations for specific applications.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Pentti Halle, mill manager of Enzo-Gutzeit O/Y, Kotka Mills, Finland.

Birger Jaatinen, assistant technical manager, G. A. Serlachius O/Y, Mantta, Finland.

R. J. Thomas and S. F. Smith of St. Anne's Board Mill Company, Ltd., Bristol, England.

Alexander Frieden, Director of Research, Pabst Brewing Co., Milwaukee, Wisconsin, a 1923 graduate of Columbia University.

Frederick W. Goetz, Assistant Laboratory Technician, Dill & Collins Division, Mead Corporation, Philadelphia, Pennsylvania.

Pentti Halle, Mill Manager, Enso-Gutzeit Osakeyhtio, Kotka, Finland, a 1933 graduate of the Technical University, Helsinki, Finland.

Miss Eleanor F. Horsey, Chemist, Hercules Powder Co., Experiment Station, Wilmington, Delaware, a 1938 graduate of Cornell University.

E. Norval Hunter, Manager of Manufacturing, The Kalamazoo Vegetable Parchment Co., Ltd., Espanola, Ont., Canada, a 1926 graduate of the University of Manitoba.

Edward J. Jones, Jr., Student, The Institute of Paper Chemistry, Appleton, Wisconsin, a 1939 graduate of Tulane University.

Charles M. Knoll, Raw Materials Supervisor, E. I. duPont deNemours & Co., Photo Products Dept., Rochester, New York.

Lawrence A. Moore, Plant Engineer, American Coating Mills, Inc., Elkhart, Indiana, a 1936 graduate of the University of Cincinnati.

Jerrold H. Moyer, Chemist, The Champion Paper and Fiber Co., Hamilton, Ohio, a 1939 graduate of the New York State College of Forestry.

Vernon Peakes, Chemist, Alpha Cellulose Corp., Chicago, Illinois, a 1932 graduate of Massachusetts Institute of Technology.

Junius E. Sapp, Chemical Engineer, Gaylord Container Corp., Bogalusa, Louisiana, a 1939 graduate of Louisiana State University.

John J. Steinbinder, Chemist, Riegel Paper Corp., Milford, New Jersey, a 1940 graduate of Oberlin College.

Hsioh-Wu Wang, Graduate Student in Pulp and Paper Technology, University of Maine, a 1938 graduate of University of Shanghai.

Paper and Paper Stock Imports At New York and Other Ports

NEW YORK IMPORTS

WEEK ENDING AUGUST 3, 1946

SUMMARY

Newsprint	8,557 rolls
Printing Paper	76 rolls
Wrapping Paper	749 rolls
Sulphite Paper	604 rolls
Filter Paper	15 cs.
Tracing Cloth	29 cs.
Glass Paper	6 cs.
Photo Paper	108 cs.

NEWSPRINT

H. G. Craig Co., Inc., G.T.D., Donnacona, 474 rolls.

News Syndicate Co., William Cullen Bryant, Baie Comeau, 6586 rolls.

H. G. Craig Co., Inc., G.D.D., Donnacona, 365 rolls.

International Paper Co., International No. 1, Gatineau, 315 rolls.

H. G. Craig Co., Inc., Donpaco, Donnacona, 376 rolls.

H. G. Craig Co., Inc., Kermic, Donnacona, 441 rolls.

PRINTING PAPER

(———), Uddeholm, Stockholm, 76 rolls.

WRAPPING PAPER

The Borregaard Co., Inc., Goonawarra, Gothenburg, 1 roll.

Jay Madden Corp., Sapulpa Victory, Mantyluoto, 748 rolls.

SULPHITE PAPER

Vogart Co., Inc., Uddeholm, Gothenburg, 604 rolls (unbleached).

FILTER PAPER

H. Reeve Angel & Co., Inc., Empire Yukon, London, 15 cs.

TRACING CLOTH

Keuffel & Esser Co., American Forwarder, Manchester, 29 cs. (bleached cotton).

GLASS PAPER

(———), Empire Yukon, London, 6 cs.

PHOTO PAPER

Intercontinental Forwarding Co., Empire Yukon, London, 100 cs. (base paper).

(———), Empire Yukon, London, 8 cs.

RAGS, BAGGINGS, ETC.

Atlas Waste Manufacturing Co., Cable Eye, Vera Cruz, 5 bls. woolen rags.

W. Lowenthal Co., Inc., Cable Eye, Vera Cruz, 18 bls. woolen rags.

Swiss Bank Corp., Cable Eye, Vera Cruz, 72 bls. woolen rags.

J. Eisenberg Co., Rio Juarmento, Buenos Aires, 39 bls. rags; 127 bls. wool slips.

E. J. Keller Co., Inc., Newberry Victory, Trieste, 217 bls. rags.

Padawer & Co., Bloomington Victory, Santos, 116 bls. cotton waste.

Schimmel Trading Corp., Bloomington Victory, Santos, 98 bls. cotton waste.

Williamson Products Co., Bloomington Victory, Santos, 110 bls. cotton waste.

A. Bloch & Co., American Forwarder, Manchester, 108 bls. cotton gabardine cuttings.

(———), American Forwarder, Manchester, 52 bls. cotton canvas cuttings.

Lush Cotton Products Co., American Forwarder, Manchester, 33 bls. cotton waste.

Ayres W. C. Jones Co., American Forwarder, Manchester, 22 bls. cotton waste.

Royal Manufacturing Co., American Forwarder, Manchester, 54 bls. cotton waste.

1st National Bank of Boston, American Forwarder, Manchester, 1175 bls. cotton waste.

Tradesmans National Bank Trust Co., American Forwarder, Manchester, 43 bls. cotton rags.

M. E. Schoen & Co., Sea Shark, Bombay, 200 bls. cotton waste.

Buffalo Batt & Felt Corp., Sea Shark, Bombay, 200 bls. cotton waste.

Riverside Mills, Sea Shark, Bombay, 366 bls. cotton waste.

Textile & Paper Supply Corp., Sea Shark, Bombay, 100 bls. cotton waste.

Lush Cotton Products Co., Sea Shark, Bombay, 500 bls. cotton waste.

Padawer & Co., Sea Shark, Bombay, 822 bls. cotton waste.

S. H. Waldstein Co., Sea Shark, Bombay, 100 bls. cotton waste.

Brandwein Mazur & Co., Sea Shark, Bombay, 762 bls. cotton waste.

Schimmel Trading Corp., Sea Shark, Bombay, 1068 bls. cotton waste.

McKay & Co., Sea Shark, Bombay, 500 bls. cotton waste.

Camden Fibre Mills, Sea Shark, Bombay, 150 bls. cotton waste.

Atlas Waste Manufacturing Co., Golden Gate, Buenos Aires, 8 bls. rags.

Tradesmans National Bank Trust Co., Empire Yukon, London, 55 bls. rags; 46 bls. old cotton overalls.

GLUESTOCK, ETC.

Darmstadt Scott & Courtney, Great Falls Victory, Buenos Aires, 83 bls. gluestock.

H. Remick & Co., Great Falls Victory, Buenos Aires, 76 bls. hidecuttings.

J. Gorvers, Great Falls Victory, Buenos Aires, 70 bls. dry splits and trimmings.

Darmstadt Scott & Courtney, Cable Eye, Vera Cruz, 205 bls. hidecuttings.

CASEIN

Sheffield Farms Co., Inc., Mormactern, Buenos Aires, 1000 bags ground lactic casein.

National Casein Sales Co., Mormactern, Buenos Aires, 703 bags lactic casein.

Sheffield Farms Co., Inc., Golden Gate, Buenos Aires, 3000 bags ground lactic casein, 330,690 lbs.

Cidella Import & Export Co., Golden Gate, Buenos Aires, 20 bags lactic casein, 2205 lbs.

Aralac, Inc., Great Falls Victory, Buenos Aires, 834 bags casein, 110,300 lbs.

WOODPULP

Pulp Sales Corp., Gonawarra, Helsingfors, 1016 bls. white dry mechanically ground woodpulp, 203 tons.

Pulp Sales Corp., Sapulpa Victory, Helsingfors, 2423 bls. white dry mechanically ground woodpulp, 481 tons.

Pulp Sales Corp., Sapulpa Victory, Mantyluoto, 780 bls. prime unbleached sulphite pulp, 156 tons; 160 bls. prime bleached sulphite pulp, 26 tons; 965 bls. white dry mechanically ground woodpulp, 193 tons.

Cellulose Sales Co., Inc., Winthrop Victory, Kramfors, 708 bls. sulphite pulp, 116 tons; 600 bls. dry sulphate pulp, 98 tons.

WOODPULP BOARDS

Jay Madden Corp., Sapulpa Victory, Helsingfors, 952 bls. (solid white) 276 tons; 1218 rolls (solid white) 340 tons.

ALBANY IMPORTS

WEEK ENDING AUGUST 3, 1946

Price & Pierce, Ltd., Winthrop Victory, Wallvik, 10,050 bls. dry sulphate pulp, 1700 tons; 150 bls. dry sulphite pulp, 25 tons.

Elof Hansson, Winthrop Victory, Sandviken, 6000 bls. dry sulphate pulp, 1000 tons.

Cellulose Sales Co., Inc., Winthrop Victory, Kramfors, 2454 bls. sulphite pulp, 405 tons.

J. Anderson & Co., Withrop Victory, Kramfors, 3084 bls. dry sulphate pulp, 505 tons.

BOSTON IMPORTS

WEEK ENDING AUGUST 3, 1946

Jay Madden Corp., Goonawarra, Gothenburg 453 bls. solid white woodpulp boards, 96 tons; 5 bls. brown woodpulp boards.

S. L. Ayres & Co., Sea Shark, Bombay, 245 bls. cotton waste.

Ayres, W. C. Jones Co., Sea Shark, Bombay, 300 bls. cotton waste.

Green Textile Associates, Inc., Sea Shark, Bombay, 400 bls. cotton waste.

Empire Fibre Co., Sea Shark, Bombay, 200 bls. cotton waste.

New England Waste Co., Sea Shark, Bombay, 2023 bls. cotton waste.

Week's Record of Trends in The Pulp and Paper Market

Office of the PAPER TRADE JOURNAL,
Wednesday, August 7, 1946

Supply of paper and paper products in the wholesale channel continues to be much less than demand with the greatest shortage reported to be in kraft and fine papers. In some areas more distant from manufacturing points distributors and consumers blame transportation costs as a factor contributing to difficulties in obtaining paper in view of some mills reportedly favoring customers with lower freight rates. Distributors also report scarcity of lower grade papers which are less profitable for mills to produce. Mills manufacturing groundwood printing, book and fine papers operated at high levels during May and June. Production of book papers during May declined slightly compared with the preceding month, but the output of groundwood printing and fine papers increased during the same period. Production of all three classes during the first five months of 1946 was higher than for the same period last year. Both in tonnage and percentage the greatest increase occurred in book papers, which rose 32 per cent this year, compared with 23 per cent for groundwood printing and specialty papers, and of 11 per cent for fine papers. Demand for these papers continues to run well ahead of supplies, with book papers, coated and uncoated reported in shortest supply.

The pulpwood situation continued generally satisfactory through June, according to field reports. Principal problems were shortages in freight cars and continued difficulties in obtaining logging trucks, tires, and tractors, especially in the South and on the west coast. A substantial slump in southern pulpwood receipts were recorded in May, amounting to around 100,000 cords less than in May 1945 and about 150,000 cords under April this year. Except for localized wet weather which hindered some woods operations, the chief factor reported was lack of freight cars and trucks to move cut pulpwood from sidings and landings to mills. Light pulpwood trucks are still hard to obtain and producers have been reluctant to purchase surplus heavy Army trucks which are not considered economical for pulpwood. The situation is reported to have improved somewhat since June.

The supply situation with regard to starch and casein continues tight. Department of Agriculture is currently determining corn inventories of wet millers and their expected receipts of corn, which will be supplemented sufficiently so that each wet miller will be able to operate at about 80 per cent of capacity. It is expected that this will produce enough corn starch to satisfy the minimum requirements of industrial users. The essentiality of use will be decided by CPA and the Department of Agriculture and millers will be requested to ship starch only to such users.

The index of general business activity for the week ended July 27 rose to 138.1 from 136.4 in the previous week, compared with 140.4 for the corresponding week in 1945. The index of paperboard production rose to 159.0 from 155.6 in the previous week, compared with 154.2 for the corresponding week in 1945.

Paper production for the week ended July 27 was estimated at 104.7 per cent compared with 102.8 for the preceding week, with 93.4 for the corresponding week in 1945, with 91.3 for 1944, with 90.8 for 1943, and with 81.0 per cent for the corresponding week in 1942.

Paperboard production for the week ended July 27 was 95.0 per cent of capacity, compared with 94.0 per cent for the preceding week, with 95.0 for the corresponding week in 1945, with 96.0 for 1944, with 97.0 for 1943, and with 76.0 per cent for the corresponding week in 1942.

Wood Pulp

OPA is back in control once more, but no immediate decision on Canadian and Swedish prices has been forthcoming to date. Buyers of imported pulp were only partly reassured by the knowledge that the extension law requires OPA to adjust ceiling prices on imported commodities as stated in paragraph "X" of Section 10 as follows: "Whenever the world price of a commodity essential to the United States economy exceeds the ceilings, and results in actual reduction in imports, etc., the administrator shall promptly remove maximum purchase prices or increase the maximum purchase price, etc."

Meantime as the law comes back, the dollar and cents ceiling of pulp revert to the exact figures of June 30. In the interim, subsidy mills have hopes of getting something so they will not be forced to charge customers from $4 to $12 per ton extra. But if they are not returned the subsidy they are going to bill their customers anyway as several are now doing.

Rags

Market for cotton rags is firmer. Some dark cottons are available below $75 dock, others are quoted at around $80. Domestic heavy wipers remain at $52 to $55 in combination deals with classification stock at $29 and $31 per ton. OPA has no effect on the market since items selling over ceiling are free from control, such as foreign rags and wipers.

Export demand for new cotton cuttings is reported to have brought bids as high as 11.50c f.a.s. Domestic items are steady, and all upgrading continues at or below ceilings.

Old Rope and Bagging

Market for old rope continues steady at 5.75c for Manila and 4.75c for sisal. Jute strings are unchanged at 5 to 5.50c for soft and 4c or less for hard jute. Mixed strings remain at 1½c per pound.

Improvement is noted in the bagging market with mill run gunny reported at $4.60 delivered; British gunny at $4.25 ex-dock. Domestic mill run bagging is firm at $4 southern shipping point. No. 1 scrap bagging delivered to paper mills remains at $4.75. Scrap burlap is traded at $3.50 to $3.75 shipping point.

Waste Paper

Waste paper prices are nearing ceilings on most all grades. Mixed news and corrugated are only $1 per ton short of ceilings, with no mills to date reported paying the $2 per ton loading charge. Some mills have paid the $1 loading charge on car shipments where cars were loaded away from a dealer's siding. High grades are firm at $67.50 and $57.50 in large volume. Book stocks remain a question mark. Genuine No. 1 stock commands ceiling prices, but most book stock still fails to meet mill specifications and only brings $25 to $30 per ton. Reports continue that news will soon be exported to India, but to date this has not materialized.

New Handling Booklet Simplifies Hoist Selection

Information on how to select the proper chain hoist for the job is given in a new 36-page illustrated booklet just issued by the Reading Chain & Block Corporation of Reading, Pa.

The new data book takes the guesswork out of hoist selection by pointing out the capacities, lifting speeds, applications and operating efficiencies of various types of chain hoists. In addition to a comparison of chain hoist types, the booklet discusses different methods of hoist installations, and shows the type mounting best suited to such handling operations as are encountered in plants, garages, and on loading docks. Industrial hoist users will also find accurate data on the comparative strength of wooden trusses and steel I-beams for mounting purposes.

This complete and accurate reference book is available on request to plant owners, superintendents, foremen and other hoist users. A copy of the booklet can be obtained by writing direct to the Reading Chain & Block Corporation, Reading, Pa., for catalog No. 60.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, August 7, 1946.

BLANC FIXE—Demand reported active. Pulp is currently quoted at $40 per ton, in barrels, car lots, at works; the powder is currently quoted at $60 per ton, car lots f.o.b. works.

BLEACHING POWDER — Market tight, demand steady. Supply situation is reported favorable with containers a bit easier to get. Quotations are unchanged. Prices on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots at works.

CASEIN — Prevailing prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 33 cents per pound; 2,000 pounds 33¼ cents per pound: less than 2,000 pounds, 33¾ cents per pound, f.o.b. shipping point.

CAUSTIC SODA—Very heavy demand while cutback production continues to reduce stocks. Market tight with demand above output. Solid caustic soda is quoted at $2.30 per 100 pounds; flaked and ground is quoted at $2.70 to $2.95 per 100 pounds. All prices car lots.

CHINA CLAY—Demand remains fair to good. Quotations remain unchanged. Supply good. Domestic filler clay is currently quoted at from $8.50 to $9 per ton; coating clay is quoted at from $12 to $22 per ton, at mine. Imported clay is quoted at from $22 to $25 per long ton, ship side. All prices car lots.

CHLORINE—Current demand continues heavy, with notable improvement in container supply. Quotations unchanged. Chlorine is currently quoted at $2.00 to $2.25 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—Savannah, Ga., quotations per 100 pounds in drums: B, $6.00; D, $6.07; E, $6.60; F, $6.70; G, $6.74; H & I, $6.76; K, $6.80; M, $6.82; N, $6.98; WG, $7.06; WW & X, $7.15.

SALT CAKE—Inventories low with demand increasingly heavy. Prices remain unchanged. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f.o.b. shipping point.

SODA ASH — Active over-all demand is reported. Market remains tight with demand above output. Orders allocated to equalize distribution. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.95; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Demand exceeding record capacity of the industry. Previous orders filled. Starch prices continue unchanged. The pearl grade is quoted at $5.87 per 100 pounds; powdered starch at $6.02 per 100 pounds; both prices in bags; car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA — Supplies moderate with demand reported active. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.35 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is currently quoted at $1.75 to $2.00 per 100 pounds, in bags, at works.

SULPHUR—Quotations on sulphur continue to conform to prevailing market prices. Demand moderate. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price f.o.b. at Gulf Ports is $17.50 per long ton. Prices in car lots.

TALC—Prices on talc continue unchanged. Demand steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $24 to $30 per ton. All prices in car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March, 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	$67.00	@	—
Sheets	75.00	@	—
Kraft—per cwt.—Carload Quantities Zone A, Delivered			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard bag	*4.75	"	—

* Prices for Standard Wrapping are for 40 lb. base weight; for Standard Bag for 30 lb base weight.

Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila 35 lb.	6.00	"	7.00
Boards, per ton—			
News	*54.00	@	—
Chip	*54.00	@	—
Sgl. Mla. Ll. Chip	*65.00	@	—
White Pat. Coated	*79.00	@	—
Kraft Liners 50 lb.	*74.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items
Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper
Delivered in Zone 1:

No. 1 Glossy Coated	$13.65@$15.50
No. 2 Glossy Coated	12.40 " 14.00
No. 3 Glossy Coated	11.60 " 13.25
No. 4 Glossy Coated	11.15 " 12.75
No. 1 Antique (watermarked)	10.25 " 11.75
No. 2 Offset	9.60 " 11.00
A Grade E. F.	9.35 " 10.75
A Grade S. & S. C.	9.60 " 11.00
B Grade E. F.	8.85 " 10.25
B Grade S. C.	9.10 " 10.50
C Grade E. F.	8.55 " 9.75
C Grade S. C.	8.80 " 10.00
D Grade E. F.	8.25 " 9.50
D Grade S. & S. C.	8.50 " 9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers' Prices, Less Freight. Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$94.00
Unbl. Softwood Sulphite	82.00
Bl. Hardwood Sulphite	91.50
Unbl. Hardwood Sulphite	79.50
Bl. Glassine Sulphite	97.00
Unbl. Glassine Sulphite	86.00
N. Bleached Sulphate	94.00
S. Bleached Sulphate	88.00
N. Semi-Bleached Sulphate	89.00
S. Semi-Bleached Sulphate	83.00
N. Unbl. Sulphate	76.00
S. Unbl. Sulphate	69.50
Bl. Soda	84.00
Unbl. Soda	80.00
Groundwood	58.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$12.50
Lake Central	12.50
Southern	15.00
West Coast (in area)	9.50
West Coast (out area)	15.50

	50%-80% Air Dry Weight
Northeast	$10.50
Lake Central	10.50
Southern	13.00
West Coast (in area)	8.50
West Coast (out area)	14.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$7.50
Lake Central	7.50
Southern	10.00
West Coast (in area)	6.50
West Coast (out area)	12.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags

(Nominal Prices Delivered at Mill + 5% Brokerage)

Shirt Cuttings—			
New White, No. 1	7.25	@	Nominal
Silesias No. 1	5.75	"	"
New Unbleached	7.50	"	"
Blue Overall	5.50	"	"
Fancy	3.50	"	"
Washables	3.00	"	"
Bleached Khaki Cutting	4.25	"	"
Unbleached Khaki Cuttings	3.50	"	"

Old Rags

White, No. 1—			
Repacked	3.80 @	Nominal	
Miscellaneous	3.20 "	"	
White, No. 2—			
Repacked	2.90 "	"	
Miscellaneous	2.65 "	"	
Thirds and Blues—			
Repacked	2.20 "	"	
Miscellaneous	1.30 "	"	
Roofing Rags—			
No. 1	1.55 "	"	
No. 2	1.45 "	"	
No. 3 (bagging)	1.35 "	"	
No. 4	1.35 "	"	
No. 5A	1.35 "	"	
Old Manila Rope	5.75 "	"	

Foreign Rags

(All Prices Nominal)

New Rags

New Dark Cuttings	6.00 @	Nominal
New Mixed Cuttings	6.50 "	"
New Light Silesias	5.75 "	"
Light Flannelettes	5.75 "	"
New White Cuttings	12.00-14.00	
New Light Oxfords		Nominal
New Light Prints	8.00-10.00	

Old Rags

No. 1 White Linens	8.50 @	Nominal
No. 2 White Linens	7.50 "	"
No. 3 White Linens	Nominal	
No. 4 White Linens	3.25 @	Nominal
No. 1 White Cotton	4.75 "	"
No. 2 White Cotton	3.75 "	"
No. 3 White Cotton	3.00 "	"
No. 4 White Cotton	2.20 "	"
Extra Light Prints	2.40 "	"
Ord. Light Prints	5.50 "	"
Med. Light Prints	4.75 "	"
Dutch Blue Cottons	Nominal	
French Blue Linens	Nominal	
Checks and Blues	4.00 "	"
Linsey Garments	4.00 "	"
Dark Cottons	3.60 "	"
Old Shopperies	3.35 "	"
New Shopperies	3.50 "	"
French Blues	Nominal	

BAGGING

(Prices to Mill, f.o.b. N. Y.)

Gunny No. 1—		
Foreign	4.00 @	Nominal
Domestic	3.30 "	"
Wool Tares, light	4.00-4.75	
Wool Tares, heavy	4.50 @	Nominal
Bright Bagging	3.50 "	"
Manila Rope—		
Foreign	Nominal	
Domestic	5.75 @	Nominal
Jute Strings	4.50 "	"
No. 1 Sisal Strings	3.00 "	"
Mixed Strings	1.50 "	"

Waste Paper

Nominal Prices to Mills

(Dollars Per Ton)

F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$67.50	@	—
No. 1 Hard White Envelope Cuts	62.50	"	—
No. 1 Hard White Shavings, unruled	57.50	"	—
No. 1 Hard White Shavings, ruled	50.00	"	—
Soft White Shavings, one cut	57.50	"	—
No. 1 Soft White Shavings	50.00	"	—
Soft White Shavings, Misc.	43.00	"	—
No. 1 Fly Leaf Shavings	33.50	"	—
No. 2 Fly Leaf Shavings	22.50	"	—
No. 1 Groundwood Fly Leaf Shavings	25.00	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	18.50	"	—
Mixed Colored Shavings	15.50	"	—
Mixed Groundwood Colored Shavings	18.00	"	—
Overissue Magazines	33.50	"	—
No. 1 Heavy Books & Magazines	38.50	"	—
Mixed Books	22.00	"	—
No. 1 White Ledger	46.00	"	—
No. 2 Mixed Ledger, colored	40.00	"	—
New Manila Envelope Cuttings, one cut	57.50	"	—
New Manila Envelope Cuttings	53.00	"	—
Extra Manilas	39.00	"	—
Mixed Kraft, Env. & Bag Cuttings	55.00	"	—
Kraft Envelope Cuttings	65.00	"	—
Triple Sorted, No. 1 Brown Soft Kraft	50.00	"	—
New 100% Kraft Corrugated Cuttings	45.00	"	—
No. 1 Assorted Old Kraft	35.00	"	—
New Jute Corrugated Cuttings	18.50	"	—
Old 100% Kraft Corrugated Containers	35.00	"	—
Box Board Cuttings	14.50	"	—
White Blank News	33.00	"	—
Overissue News	22.00	"	—
No. 1 News	20.00	"	—
No. 1 Mixed Paper	19.00	"	—
Old Corrugated	28.00	"	—
Mill Wrappers	22.00	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill)

Shirt Cuttings—	
New White No. 1	.07¼
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable Shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03¼
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¼
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¼

Domestic Rags (Old)

White No. 1—Repacked	3.80	@	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	@	3.50
No. 1 Clean Bright—			
Sisal Strings	.04	"	—
No. 2 Clean Bright—			
Sisal Strings	.03	"	—
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Ledger, colored	2.00	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.40	"	—
Overissue News	1.00	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	2.75	@	2.90
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	* —	"	4.00
Mixed Rope	1.60	"	—
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.00	"	3.25
South America	—	"	3.25
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	—	"	3.65
New Zealand Wool Pouches	—	"	3.50
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

* OPA Maximum Prices.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.05
New White No. 1	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06¼
Underwear Cutters, Bleached	.06¼	"	.06¼
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¼
New Black Silesias	.03	"	.03¼
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¼
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¾	"	.03¾
New Canvas	.06¼	"	.06½
B. V. D. Cuttings	.06¼	"	.06½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—*
No. 2	1.45	"	—*
No. 3	1.35	"	—*
No. 4	1.35	"	—*
No. 5, Quality A	1.35	"	—*
Quality B	1.20	"	—*
Quality C	.95	"	—*
Old Manila Rope	5.75	"	—*

* OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—

NEW 44" NATIONAL AUTOMATIC CUTTERS.
Compact—Accurate—Sturdy
Completely equipped
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Dams and Other Hydraulic Structures

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PAPER & PULP MILLS • WASTE DISPOSAL • TEXTILE MILLS •
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Paper and Pulp Mills, Hydro-Electric and Steam Power Plants, Plans and Specifications

STEAM TURBINES, HELICAL GEARS, WORM GEARS, CENTRIFUGAL BLOWERS AND COMPRESSORS
CENTRIFUGAL PUMPS, PROPELLER PUMPS, CLOGLESS PUMPS, MIXED-FLOW PUMPS, DE LAVAL-IMO OIL PUMPS
DE LAVAL STEAM TURBINE CO. TRENTON 2, NEW JERSEY

PAPER MILLS BUILT AND EQUIPPED
This Corporation is at present engaged in building the first of a series of contemplated extensions to an existing plant. If you plan extensions or modernization, consult
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You can get uniform sizing regardless of stock or water temperatures or chemical impurities
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Manufacturers of
Paper Coating Machines
1155 Scottsville Road, Rochester 11, N. Y.
Waxing & Oiling, Carbon, Laboratory, Flat Ream Converting and Measuring and Roadmarking.

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THE CORROSION RESISTANT ALLOY
CAST • ROLLED • FABRICATED
for all equipment exposed to corrosion by sulphite acids
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APPLETON WIRE WORKS, INC. APPLETON, WIS.

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HELP WANTED—5c a word. Double rate for heavy face type. Minimum charge $1.25.
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OPPORTUNITIES—5c a word. Double rate for heavy face type. Minimum charge $1.25.
Classified advertising space may also be purchased at $3.00 per single column inch.

All classified advertisements are payable in advance. If box number is used—35 cents additional.
Address replies to advertisements appearing under Box numbers in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.

Copy for Classified Advertisements must be in our office on Monday preceding publication

HELP WANTED

TWO EXCELLENT OPPORTUNITIES IN EXPANDING PAPER PLANT

Positions of assistant power plant superintendent and bag machine designer open in expanding pulp and paper operation in Southeast. Qualifications:

Asst. Power Plant Supt.—Approximately 35 years of age graduate in mechanical and electrical engineering, supervisory experience in power plant. Prefer Southerner or person with considerable residence in South.

Bag Machine Designer—30 to 45 years of age, four or more years experience in designing small automatic equipment, ability to perform individual design assignments, well-proportioned sense of cost and practicability of design.

Salaries are commensurate with experience and ability. Give full particulars in first letter. Replies held confidential. Box No. 46-537 care Paper Trade Journal. A-8

ENGINEER-DESIGNER

A splendid opportunity for someone with experience with a will to advance. The position is with a smaller company making paper machinery which is growing fast and willing to pay well. Address Box 46-509 care Paper Trade Journal. A-15

WANTED

Engineer capable of taking complete charge of Power Plant in a Paper Mill located in the South.
Must be well experienced in boiler and turbine generator operations and maintenance.
Prefer a Graduate Engineer.
Address Box 46-488 care Paper Trade Journal. A-8

WANTED

TOUR BOSS

Experienced in Roofing Felt Mill operations, to be trained for Assistant Superintendent job in New Orleans Plant of long established nation-wide organization. Send complete resume giving experience, education, salary expected, etc., to Box 46-483 care Paper Trade Journal. A-8

WANTED

Machine Tenders and Back Tenders, Several Openings on Fourdrinier Machines in Mill Making Light Weight Sulphite Grades. Location Southern New York. Give Details, Age, Family Status and Experience. Address Box 46-489 c/o Paper Trade Journal. A-8

HELP WANTED

CHARLES P. RAYMOND SERVICE, INC.
294 Washington St., Boston, Mass.
Specializing in Paper Mill Personnel
Positions Now Open

Divisional Sales Mgr. around $10,000
Supt. wet machine binder & fibre board mill
Supt. cylinder machine, ship board & manila plant
Mechanical Engineer—Master Mechanic
Development & Designing engineer, pulp mill machinery
Technical control chemist board mill
Tour boss roofing felt
Machine tenders and others
We invite correspondence (strictly confidential) with paper and pulp mill executives seeking new positions and with employers seeking new personnel. A-8

SALARIED POSITIONS

$2,500-$25,000. This thoroughly organized confidential service of 36 years' recognized standing and reputation carries on preliminary negotiations for supervisory, technical and executive positions of the calibre indicated. Retaining fee protected by refund provision. Identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.

WANTED

Tour Boss, Machine Tenders, Back Tenders, Third Hands, familiar with manufacturing toilet, napkin, facial tissue, in an Eastern mill. Reply to box—46-466 care Paper Trade Journal. S-12

WANTED

Mid-West Pulp and Paper Mill desires Boss Machine Tender or Tour Foreman for fourdrinier machine. Excellent opportunity for advancement for right man. Technical training desirable but not essential. Write Box 46-486 giving full information in first letter, including compensation required. A-8

Superintendent — Mechanical Engineer preferred—to take charge of large Paper Bag Manufacturing Plant in N. Y. City. Prefer man who has had experience in this line. Age 35 to 45 years. Must be capable of handling labor, etc.
State qualifications and salary required. Excellent future for right man.
Address Box 46-462 care Paper Trade Journal. A-8

Printing department supervisor required immediately by converter in New York metropolitan area. Give full information in first letter. Reply to Box 46-487 Paper Trade Journal, 15 West 47th Street, New York 19, N. Y.

A-8

HELP WANTED

PROCESS ENGINEER

Wanted

With wide experience in pulp and paper making processes. Must be able to develop flow diagrams and specify related equipment. Excellent opportunity for the right man. Please furnish complete experience record.
Address Box 46-261 care Paper Trade Journal. TF

WANTED

We have an opportunity for a man experienced in the conversion of facial tissue, familiar with the Tealt folder, Container Equipment gluers and automatic boxers. Salary is entirely dependent upon how valuable you make yourself to us. Permanent, responsible job. Complete history of your experience and preferably a picture with your reply. Vicinity New York City.
Box 46-427 care Paper Trade Journal. A-15

NOTICE

R. W. (Bob) Stevens is now recruiting an entire operating staff for a completely new paperboard mill in Los Angeles, California. Want superintendent, papermakers and maintenance men. Interested parties write air-mail giving full particulars in first letter to R. W. Stevens, 920 De La Fuente St., Monterey Park, Calif. Exceptionally good wages and working conditions. A-22

WANTED—Paper Mill Chemist to fill position of assistant chemist in paperboard mill. Experience in coating desirable. To work on mill problems and research. Location Los Angeles. Give education, age, experience, references and salary expected. Send photograph. Address Box 46-505 care Paper Trade Journal. A-15

WANTED—One experienced machine tender familiar with cylinder machines making .009 corrugated, .030 liners to .040 chip board. Mill located in Caracas, Venezuela. Transportation from the States and back furnished. Contract must be for at least a year. State experience and salary desired. Address Box 46-502 care Paper Trade Journal. A-15

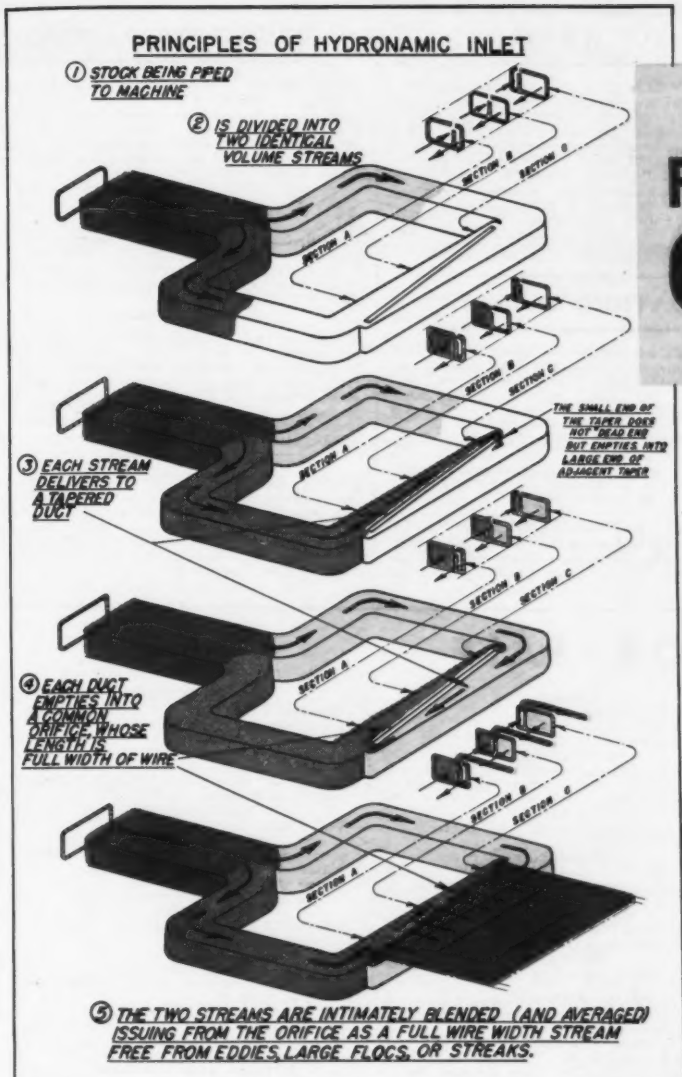
WANTED—Foreman or Superintendent having experience in embossing and embossing machines and methods. Must be able to rebuild, improve and devise. Address Box 46-428 care Paper Trade Journal. A-15

WANTED IMMEDIATELY—Backtender for Fourdrinier Kraft machine 88" width at 600 ft. per minute. Job is steady at 40 hours plus per week. Western Pennsylvania location. Rate $1.20 per hour. Address Box 46-511 care Paper Trade Journal. A-22

WANTED—Assistant General Superintendent. Excellent opportunity for right man. Kraft, sulphite, groundwood, bleach plant and paper mill in middle west. State age, experience, education and salary expected in first letter. Address Box 46-508 care Paper Trade Journal. A-15

WANTED—TOUR BOSS for prominent New England Mill with two board machines, manufacturing high grade folding box board. Permanent position. Write, giving age, qualifications and salary expected in first letter. Address Box 46-521 care Paper Trade Journal. TF

WANTED—Cylinder Machine Tender familiar with folding grades. Good hourly rate plus a bonus, with opportunity for advancement. Address Box 46-529 care Paper Trade Journal. A-29


PRINCIPLES OF HYDRONAMIC INLET
① STOCK BEING PIPED TO MACHINE
② IS DIVIDED INTO TWO IDENTICAL VOLUME STREAMS
SECTION A
SECTION B
SECTION C
THE SMALL END OF THE TAPER DOES NOT "DEAD END" BUT EMPTIES INTO LARGE END OF ADJACENT TAPER
③ EACH STREAM DELIVERS TO A TAPERED DUCT
④ EACH DUCT EMPTIES INTO A COMMON ORIFICE WHOSE LENGTH IS FULL WIDTH OF WIRE
⑤ THE TWO STREAMS ARE INTIMATELY BLENDED (AND AVERAGED) ISSUING FROM THE ORIFICE AS A FULL WIRE WIDTH STREAM FREE FROM EDDIES, LARGE FLOCS, OR STREAKS.

for FOURDRINIERS OLD *or* NEW

The B-C Hydronamic Inlet splits the stream of incoming stock into two equal parts and delivers it to the wire through specially designed tapered ducts.

Thus, a more uniform blending of the long and short fibres, avoidance of eddies and tendency for flocs to form is accomplished, making for a more level, more nearly perfect and much stronger sheet.

B-C "Pressure Inlet" type, favored for Fourdriniers of the open headbox types, are also available.

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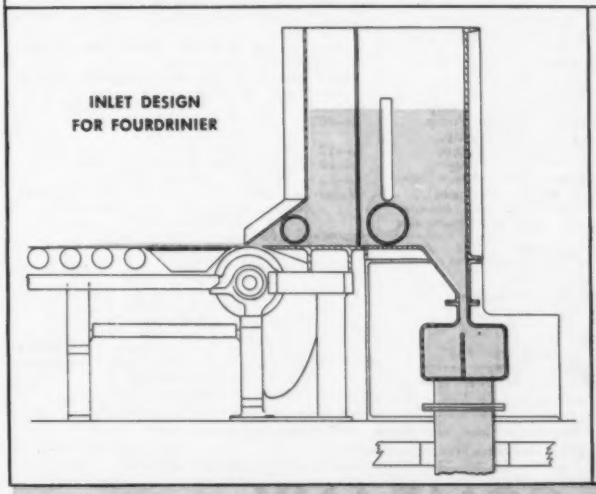

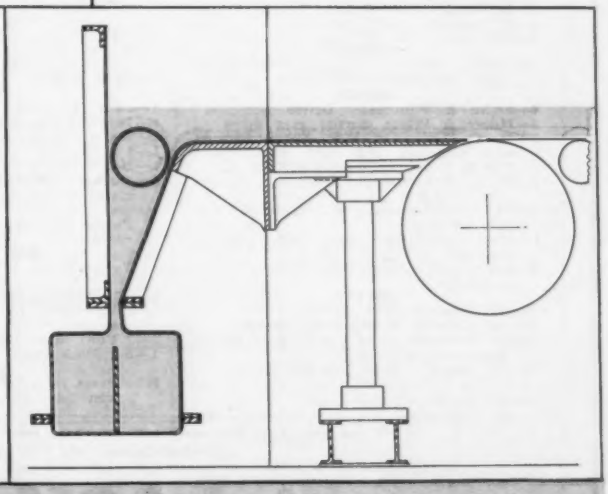

BLACK-CLAWSON HYDRONAMIC INLET

HELP WANTED

CHEMIST for research department of major producer of heavy chemicals in Metropolitan Detroit. Position requires a man of research caliber with good background of education and some experience in inorganic chemistry including special knowledge of paper chemistry with emphasis on paper coatings. Opportunity for fundamental research and practical application of results. Reply in full indicating salary requirements and include recent photograph. Applications will be held in confidence. Address Box 46-524 care Paper Trade Journal. A-8

SUPERINTENDENT—For fine paper mill, must have record of production of excellent papermaking, age no handicap if in good physical health. All applications held in strictest confidence. Address Box 46-536 care Paper Trade Journal. A-8

WANTED — Progressive Mill with expansion program under way is in need of a man familiar with the receiving and handling of paper stocks and pulps used in the manufacture of folding boxboards. Excellent opportunity for the right man. Address Box 46-526 care Paper Trade Journal. A-29

WANTED—Master Mechanic for one Machine Mill making folding grades. Excellent opportunity for right man. Good salary plus a bonus. Address Box 46-527 care Paper Trade Journal. A-29

HELP WANTED

SALESMAN WANTED—To represent manufacturer of adding machine rolls, gift wrap, shelf lining paper, to cover entire New England States. Address Box 46-530 care Paper Trade Journal. A-8

WANTED—Tour Boss experienced on folding grades. Good salary plus a bonus. Address Box 46-528 care Paper Trade Journal. A-29

WANTED—Man experienced in running Hamblet Sheeting Machine. Address Box 46-540 care Paper Trade Journal. A-15

SITUATIONS WANTED

JUNIOR CHEMIST — Graduate, New York State College of Forestry, Pulp and Paper Department. Also three years training in psychology. Age 24, single. Member TAPPI. Address Box 46-484 care Paper Trade Journal. A-8

CONVERTING PLANT or Finishing Dept. Mgr. Years practical experience, various grades, Sheeting, Rewinding, Cutting, Packing, Shipping, Clerical, Scheduling. Address Box 46-490 care Paper Trade Journal. A-15

CHEMIST, EXPERIENCED, QUALITY AND TECHNICAL CONTROL, New England or Eastern New York preferred. Address Box 46-460 care Paper Trade Journal. A-8

SITUATIONS WANTED

PRACTICAL MASTER MECHANIC and a Paper Maker. Thirty years experience in maintenance, installation, layouts on cylinders and fourdrinier equipment. Making kraft, board, tissue, waterleaf, parchment and rag stock. Desire a permanent connection. Address Box 46-400 care Paper Trade Journal. A-15

MILL REPRESENTATIVE covering the jobbing and direct trade for the past 15 years from Pennsylvania through to the Carolinas, now desires to operate over the same territories with 2 or 3 non-conflicting lines. What have you to offer? Address Box 46-412 care Paper Trade Journal. TF

EXECUTIVE AVAILABLE—18 years experience in process, product, sales development, modernization, operation and management in specialty paper and board grades and their conversion and use. Technically trained. Interested in position with manufacturer, chemical or equipment supplier or other allied fields. Address Box 46-517 care Paper Trade Journal. A-15

COST ACCOUNTANT — Presently employed, desirous of change, 33 years of age, 14 years experience newsprint, cardboard, sulphite costing in three mills, thorough knowledge mill operation, supervising preparation statistics, costs, forecasts. U. S. or Canada. Address Box 46-504 care Paper Trade Journal. A-8

FOR SALE

BEATERS
1—2000 lb. Holyoke-Iron Tub Beater.
2—1200 lb. E. D. Jones (no tubs).
1—1000 lb. Dayton Beater (no tub).
1—1000 lb. Stout & Mills Iron Tub Beater.
1—400 lb. Gavit—iron tub beater.
1—Breaker Beater—Dilts Bandless Roll 62" diameter x 54" face—70 tons daily capacity. Equipped with Shartle Bros. Ragger.
1—Breaker Beater—New Perforated Backfall—48" face roll x 54" diameter—no tub.

CALENDER STACKS
1—5 roll 84" face—Farrel.
1—6 roll—72" face.
1—7-roll 36" Holyoke Machine. (supercalender)

CENTRAP
1—Shartle Brothers Centrap.

COATING MACHINES
1—70" Waldron Brush Coater.
1—26" six roll coating machine.

COUCH ROLLS
2—82" face x 12" diameter.

CYLINDER MOULDS
2—30" diameter x 74" face.
2—30" diameter x 54" face.
1—30" diameter x 75" face.
1—36" diameter x 84" face.

DOCTORS
14—Dillon Doctors—complete with accessories—98" face.

DRIVES
4—Smith & Winchester Drives.
1—Moore & White mortise gear drive.
1—D. O. James 75 H.P. Speed Reducer with couplings and motor base. Ratio 2.16 to 1. 900 RPM to 418 RPM.
7—D. O. James Angle Drives—11 to 1—7 to 10 h.p.
2—Reeves Drives—Size 000—Class G (Totally enclosed).
1—Link Belt Drive—Size TE3. (Totally enclosed).
1—Link Belt Drive—Size TE1. (Totally enclosed).

DRYERS
1—48" diameter x 94" face.
1—24" diameter x 84" face. (Baby)
2—36" diameter x 64" face, with frames gears and bearings.
2—25" x 120" (Baby Dryers).
2—30" x 120".
1—48" x 100".

DRYERS
11—30" x 80". (Steel Dryers).
5—24" x 76". (Steel Dryers).
2—36" diameter x 38" face.

ERKENSATORS
2—I. W. E. Erkensators—bronze construction—complete with motors, starters and distributing box.

FLAT SCREENS
1—12 plate Murray Dunbar Flat Screen.
1—4 plate Flat Screen.

JORDANS
1—No. 2 Miami Jordan.
1—No. 9 Emerson Jordan—for direct connection to a motor.
1—Noble and Wood, Monarch, new fillings.

LABORATORY EQUIPMENT
2—Mullen Testers.

MOTOR
1—25 h.p. motor, including starting equipment.

PRESS ROLLS (Rubber Covered)
1—27½" diameter x 186" face.
1—26" diameter x 185" face.

PULP EQUIPMENT
1—84" Carthage Chipper (Four Knives).
1—32" three pocket Glens Falls Grinder (for 27" wood).

PULP SCREEN
1—IMPCO centrifugal pulp screen design No. 3.

PULPER
1—Jones Pulper.

PUMPS
1—10 x 11 Connersville Vacuum Pump.
1—10 x 7½ Connersville Vacuum Pump.
1—No. 4 Connersville Vacuum Pump.
1—6 x 2L Connersville Vacuum Pump.
1—No. 7 Sturtevant Vacuum Pump.
1—Buffalo Pump—5500 g.p.m. direct connected to 100 H.P. Motor (50' head).
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

RAG CUTTER
1—Taylor Stiles, 14", Little Giant.

REELS
1—72" Downingtown Expansion Reel.
1—2 Bowl Reel — 112" face — bowls 20" diameter.
1—2 Bowl Reel—110" face.
1—Set Stack Reels, capacity trim 143".

ROLLS
500—Brass tube—steel tube—rubber covered iron rolls—various sizes.

ROTARY SCREENS
3—Moore & White Rotary Screens (alternating diaphragm type).

SAVEALL
1—Saveall 36" diameter x 96" face cylinder mold. (With iron end vat.)
1—Saveall 36" diameter x 96" face cylinder mold. (With wood vat.)

SCREW PRESS
1—Valley Iron Screw Press.

SCREEN PLATES
36 plates—43 x 11½"—.050 cut—bevel edges.
24 plates—Recently recut .008.
12 plates—Recently recut .035.
Also other sizes and cuts in stock.

SHREDDERS
1—No. 25 CRSE Mitts & Merrill Hog.
1—Gilman Shredder.
1—Waterville Shredder.

SHEETERS
1—84" Finlay Sheeter, Erie Layboy and 9 roll backstand.
1—128" Moore & White Sheeter with layboy.
1—48" Langston heavy duty chopper (this is a combination machine, combining a slitter, scorer, sheeter and chopper.)

SLITTERS AND WINDERS
1—52" Johnstone Slitter & Winder.
1—36" Beck Razor Blade type Slitter & Winder.
1—60" Moore & White Slitter and Winder set for ¾" slits.
1—60" Moore & White Slitter and Winder set for 7/16" slits.
1—120" Moore & White 4 drum slitter.
1—80" 2 drum Warren Winder.

STOCK PUMPS
1—12 x 20 Triplex Shartle.
1—10 x 20 Duplex Shartle Brothers.
1—10 x 12 open impeller. (All lead).
Numerous other Centrifugal Stock Pumps. Advise as to your requirements.

SUCTION BOX
1—Nash 100" face Suction Box.

TRIMMER
1—74" Seybold Trimmer.

VACUUM PUMPS
4—Nash Vacuum Pumps (H-5).

V-BELT DRIVES
1—{23" diameter x 14" face, 10 grooves.
{15" diameter x 14" face, 10 grooves.
1—{32" diameter x 21¾" face, 15 grooves.
{14¾" diameter x 21¾" face, 15 grooves.

WET MACHINE
1—74" Moore & White.

We are always in the market to purchase your surplus or idle machinery. What have you to offer? Wanted Cylinder and Fourdrinier Machines (complete mills).

J. J. ROSS COMPANY

250 Frelinghuysen Ave. Tel.—Bigelow 3-3720 Newark 5, N. J.

TELEPHONE
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ROSS PAPER MACHINERY CO.

265 PASSAIC STREET
NEWARK 4, N. J.

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PAPER MAKING EQUIPMENT

NEW, USED REBUILT
PAPER AND PULP MACHINERY

1—Shartle Brothers 2 cylinders—120" machine. (Can supply four additional cylinders and vats). Machine includes:—2 pairs of baby presses, 3 pairs of primary presses, 2 pairs of main presses, 27 dryers 36" diameter x 115¼" face—3 deck—spare cylinder mould and couch. Drives, stands, line shaft and pulleys. Blue prints available.

1—Farrel Birmingham 16" Asphalt Extruder Complete.—Used 7 months.

AIR HOISTS
2—Two-Ton Ingersoll Rand
2—Five-Ton Ingersoll Rand

BEATERS
4—1000 lb. Horne Iron Tub.
1—1200 lb. Holyoke Wood Tub.
4—Valley Iron 750 lbs. Iron Tub Beaters, with Silent Link Belt Drive.

BIRD SCREEN PLATE
26 Plate—60 cut. New condition.

BLOWERS
1—American ball bearing blower, size 17" x 23" for motor drive.
1—American Blower, size 40. For belt drive.

CALENDER DOCTORS
1 set of 16 Warren Doctors 104" face with frames.

CALENDER ROLLS
30 rolls various sizes

CALENDER STACKS
1—6 roll Beloit, 110" face.
2—2 roll Holyoke 36" face.
1—9 roll Moore & White—82" face.

CONVERTING EQUIPMENT
4—Sanitary Napkin Machines. With motors and starters.
1—Bliss Double Head Stitcher.
4—Watervike Grinders.
1—38" Waldron Reeling Machine.
1—39" Dampening Machine.
1—36" Brush Coating Machine.
1—Copper Mixing Tank with agitator—40 gal.
1—Cast Iron Kettle 20" x 24" 2 outlets.

CREPING MACHINE
1—Complete Bagley & Sewall Creping Machine. Dryer 180" face x 48" diameter. Ball bearing equipped. Used 6 months.

CYLINDER MOLDS
3—Impco—84" face—40" diameter with stainless steel face wire
2—110" face x 36" dia.
1—90" face x 36" diameter—with ball bearings and cast iron end vats.
6—84" face x 36" diameter.
4—Cylinder Molds—cast iron end vats—cylinders 120" face x 36" diameter. Ball bearing.

DANDY ROLLS
2—122" face 10" dia.
1—138" face 12" dia.
1—129" face 9½" dia.

DRIVES
1—Falk 25 h.p.—7.5 to 1.—1750 r.p.m.

DRYER DOCTORS
40—Warren Doctors. Various sizes.

DRYERS
36—28" diam. 96" face 2 deck frames Beloit.
72—48" Dia. x 46" Face, Chromium Plated.
2—24" Dia. x 46" Face.

ELECTRIC HOIST
1—Sprague Electric 3 ton hoist—5 h.p. 3 phase—60 cycle—110 volts.

FLAT SCREENS
1—8 plate Sandy Hill Packer—roller shoes.
1—10 plate Packer screen with scraper.

FOURDRINIER SHAKES
1—Beloit Fourdrinier Shakes.
1—Sandy Hill Bertram Shake. Late type.

FOURDRINIER WET END
1—120" Beloit Fourdrinier Wet End.
1—74" Pusey & Jones Wet End.

GRANITE ROLLS
2—112" face 20" diameter.

HAMMERMILLS
1—American Hammermill—37" anti friction bearing equipped.
1—Jeffrey Swing Hammer size 18"x24"—Type A.
1—Williams 18" Hammermill Ball Bearing.

HOG
1—Mitts & Merrill Hog. Number 5Z52.

JORDANS
2—E. D. Jones Majestic Jordans, with one new set of fillings for both plugs and shell—belt driven.
2—#2 Miami Jordans—motor driven.

MISCELLANEOUS
2—Nugent Oil Filters (new).
1 Shartle Brothers cast iron Riffler or Settling Trough. 72' long, 6'7" wide.

MOTORS
1—Westinghouse 200 h.p.—285 r.p.m.—440 volts—3 phase—60 cycle.

PLATERS
2—Holyoke 2 Roll 18" dia. 36" face.

PULLEYS
60—Cone Split and Solid Cast Iron Pulleys. Various Sizes.

PULP EQUIPMENT
1—126" face Kamyr Press.
1—84" Sumner Disc Barker with motor.

PULPERS
1—Sturtevant Bale Pulper with conveyor & motors used three years.
1—Voith Pulper 20 tons cap.

PUMPS
4—Worthington Pumps 10,000 g.p.m.—35' head. Requires 75 h.p. at 550 r.p.m.
1—DeLaval 6" x 6".
1—DeLaval 1800 g.p.m. 30' Head, 500 r.p.m.—8" Suction—10" Discharge, Ball Bearing—Belt Driven—or for Direct Connection to Motor. Open Impeller.
11—Worthington Close Coupled Centrifugal Pumps. 6" x 6" 650 g.p.m. 25' head. 6 h.p. Star Electric splash proof motor. 1750 r.p.m. 440 volt, 3 ph.-60 cycle, ball bearing.
16—Warren Vertical Pumps. 6" suction. 3" discharge. 135 g.p.m. 80' head. Direct Connected 6 h.p. General Electric motor. 1750 r.p.m. 440 volts, 3 ph.-60 cycle, ball bearing.
1—Warren Close Coupled Centrifugal Pump. 3" suction. 2" discharge. 60 g.p.m. 90' head. 6 h.p. General Electric 1750 r.p.m. 440 volts, 3 ph-60 cycle, ball bearing. All the above pumps and motors are in excellent condition and are of bronze construction.
2—Worthington 3", 2 stage, 200 g.p.m. 224' head. Bronze Ball Bearings.
4—Pusey & Jones Open Impeller, 10" Stock Pumps, Belt Driven.
2—8" Pusey & Jones Open Impeller Stock Pumps, Belt Driven.
1—Worthington 400 g.p.m. 35' head 1750 r.p.m. Ball bearing.
1—15" Buffalo—4000 g.p.m.—70' head. For direct connection to motor.
2—La Bour Company self priming ball bearing pumps. 2½" suction, 2½" discharge. 150 g.p.m.—30" head with extended base for motor.
1—Domestic Pump ball bearing—250 g.p.m., 4" suction, 3" discharge—30' head with extended base for motor.
1—Marle ball bearing pump—420 g.p.m.—100' head, 4½" suction, 3" discharge. With extended base for motor.

REELS
1—Black-Clawson 2 Bowl—120" face. Takes 50" diameter roll.

REFINERS
2—#1 Claflin Refiners. Bronze construction.

ROLLS
40—Table, Dress, Felt, Wire, Breast and Calender Rolls. Various Sizes.

ROTARY COOKER
1—Rotary Cooker—6' dia. x 21' long—complete with drive.

ROTARY DUSTERS
2—E. D. Jones Steel cage down draft dusters (wing type). 48" diameter—14'6" long.

ROTARY SCREENS
2—#2 Bird with copper vats.
2—#1 Bird with steel vats, lead lined.
4—Moore & White.

RUBBER COUCH
1—82" face x 18" diameter.

RUBBER PRESS ROLLS
1—135" Face—26" Diameter } Used 20 Days
1—136" Face—27½" Diameter }
1—119" Face—19½" Diameter.
1—109" Face—17½" Diameter.
1—120" Face—19" Diameter.
1—118" Face—18" Diameter.
1—129" Face—18" Diameter.
1—107" Face—18" Diameter.
1—106" Face—18¼" Diameter.

SAVEALLS
1—A. D. Wood cylinder 48" dia. 60" face.
1—Dorr Company No. 40 ADKA Saveall 340-440 GPM. Used 1 month.

SCREW PRESS
1—Valley Iron Screw Press. Used 2 years.

SHEETERS
1—90" Beloit Single Knife heavy duty.

SHREDDERS
2—24" Sprout Waldron heavy duty shredders—anti friction bearing equipped.
1—Taylor Stiles Portable Pulp Shredder.

SLITTERS AND WINDERS
82" Warren two drum—fully rebuilt.
1—41" Waldron Slitter and rewinder. Roll embossing attachment.

STUFF PUMPS
1—10" x 20" Shartle triplex.
1—12" x 20" Shartle triplex.
2—6" x 10" Shartle Duplex direct connected to 3 h.p. gear head motors.

SUCTION BOXES
4—Brass Suction Boxes—110" face—8" wide—adjustable.
1—Brass Suction Box—120" face—8" wide—adjustable.

SUPERCALENDER STACKS
1—7 roll Norwood 72" face; 4 paper and 3 iron rolls. 1 new spare paper roll.
1—7 roll Norwood 52" face; 3 paper and 4 iron rolls. 1 new spare paper roll.
1—9 roll Norwood 83" face. Bottom roll 24" diameter. Top roll 20" diameter.

TURBINES
2—General Electric Turbine Paper Machine Drive 250 h.p.—350 r.p.m. 125 lb. steam pressure 30 lb back pressure.

UNWINDERS
1—42" John Waldron Unwinder. Used 1 year.

VACUUM PUMPS
3—14" x 20" Connersville.

WET MACHINES
1—76" Pusey & Jones Cylinder Mould, 78" face—36" diameter with rubber couch. 16" dia
1—IMPCO Wet Machine—Cylinder 84" x 48" diameter. Newly rebuilt.

YANKEE DRYERS
2—Beloit 8' dia. x 175" face—75# working pressure.
1—Beloit 5' dia. x 194" face—75# working pressure.

THE ABOVE IS A PARTIAL LIST OF EQUIPMENT OFFERED FOR SALE.

AMERICA'S LARGEST BUYERS OF PAPER MAKING MACHINERY

We buy single items to complete Pulp and Paper Mills.

SITUATIONS WANTED

TECHNICAL DIRECTOR

25 years in responsible charge

Now making SOUTHERN KRAFT ASPHALTING, CEMENT SACK, SATURATING and other converting grades to specifications.

Available on 60 days notice. Salary $12000.

Reply to Box 46-499, c/o Paper Trade Journal.

A-15

WANTED — Position as Chief Engineer — 18 years of experience in Power Plant operation, heat balance and Plant efficiency. Age 40. Best of references. Address Box 46-449 care Paper Trade Journal. A-15

MECHANICAL ENGINEER—Age 35. College graduate. Full member A.S.M.E., experienced on paper mill machinery and chemical plant and machinery design. Addres Box 46-494 care Paper Trade Journal. A-8

SALES-SERVICE, PAPER CHEMICALS — Aggressive technical graduate desires permanent location with progressive Chemical manufacturer. Ten years experience in trade with chemicals and resins. Able technician with proven sales record. Address Box 46-523 care Paper Trade Journal. A-8

TO CONVERTERS—Production Manager paper converting plant desires new connection. Unique opportunity to secure services of high grade man with excellent background. Desire plant with volume business in fine or coarse papers. Would be willing to start new plant. Address Box 46-539 care Paper Trade Journal. A-15

FOR SALE

FOR SALE

Cameron #10-10, high speed slitter and rewinder, ball and roller bearings
1—Heavy duty unwind mill stand, 54" dia. maximum rolls by 72" face
1—Hollow steel shaft to fit above
1—Pr. of 3" dogs for unwind shaft—clamp type
1—20 H.P., 3 phase, 220 v. A.C., Westinghouse
1—Automatic motor relay with remote control station
1—3" x 72" windup shaft and other miscellaneous shafts
1—Spreader Bar
11—Spreaders
1—Extra Tension Roll
10—Precision Cameron cutting wheels and frames with blocks
1—6" Leather drive belt, endless type

This machine will slit and rewind rolls up to 36" dia. The machine is like new and may be seen and operated on our premises.

Address Box 46-522 care Paper Trade Journal. A-8

FOR SALE

New brass covered felt or wire rolls 6⅝" dia., 84 to 120" face. These are made from government surplus and are new in all respects.

Osborne Paper Mill Equipment Co.
Fulton, N. Y. TF

FOR SALE—80" Shartle and Bevis Superior Waxing Machine complete with drive (except motor) unwind roll stand, shafts, chucks and rewind shaft. Complete and in good condition. Shipping weight 20,000 pounds. Address Box 46-498 care Paper Trade Jounnal. A-8

SITUATIONS WANTED

"CALL MOORHEAD IN PITTSBURGH REBUILT ELECTRIC EQUIPMENT"

REBUILT ELECTRICAL MACHINERY

Slip ring & Squirrel cage motors

HP	Make	Speed	Voltage	Type
40	G.E.	870	220/440	MTC
40(2)	G.E.	600	220/440	M T
60(3)	G.E.	600	220/440	K556
75	G.E.	600	220/440	K556
75	G.E.	720	220/440	K556
100	G.E.	1200	220/440	KF
100	West.	1750	2200/220/440	CI
150	West.	600	440/220	Syn.
200	West.	600	220/440	Syn.
208	G.E.	240	2200	MT412
300	G.E.	700	220/440	M
300	West.	1750	2200/220/440	CW
350	G.E.	900	440	I-M
350	Al.Ch.	720	440	S.R.
500	G.E.	450	2200	MT412

AC and DC Generating Equipment

1—300 KW G.E. R. Converter 250 v. DC.
75 KW Western Elec. 250 v.—2200 v.
50 KW G.E. 125 v.—75 HP 3 ph.
35 KW G.E. 250 v.—50 HP G.E. 220/440 v.
1000 amp. Westgh. SK Arc Weld Gen.
75 KW 250/275 v. West. Type S 1000.
45 KW West. SK 125 v. 700 RPM.
50 KW Westgh. Turbo 125 Volt D.C.
50 KW Westgh. Engine unit 125 v. D.C.
200 KW West. 250 v. DC—2200 v. AC

Miscellaneous

1300 cu. ft. 100#. Worth. Belted, Comp.
164 cu. ft. Chic. Pneu. Steam Comp.
500/700 HP Morse Chain Drive 4.28 to 1.
250 HP Ottumwa Unit 12.5 to 1
150 HP G.E. unit ratio 3 to 1
150 HP Nuttall 1.6 to 1
2—50 HP Ohio Forge ratio 45 to 1.
2—1 Ton Gib AC Cranes 35' swing.

MOORHEAD-REITMEYER CO., INC.
30th & Brereton Sts. Pittsburgh, Pa.

Specializing in rebuilt Electrical Machinery for over a Quarter of a Century.

FOR SALE

FRANK H. DAVIS CO.,
ESTABLISHED 1889
USED AND REBUILT PAPER MACHINERY.

FOR SALE

BARKERS
1—48" Waterville
BEATERS
1—Horne Patent, Roll 60x60, bronze bars
2—52x52 Downingtown iron tub
1—44x44 Horne iron tub
CUTTERS
1—110 Hamblet Duplex: 53" Hamblet—2 Whitin Foil Cutters
1—84" Clark with M. & W. Layboy 1—63 Beloit
1—Taylor style Rag Cutter
1—S & W 63" "Undercut" Ream Cutter
DECKERS
1—30"x95" B & C and 1—48"x100" Improved
DRYERS
1—6'x86", 1—6'x102", 106' and 106"
2—8'x175", 1—5'x194", new 1939
JORDANS
2—Union Standard for motor drive
1—N O W Pony Monarch: 1 Claflin #2
FANS
2—Buffalo double Turbo 6½ Conoidol forced draft fans
FOURDRINIER PARTS
22000 C F M 6" state pressure
1—R B O F wire 100x31 rebuilt
1—P & J wire 133x61'2" now running at 500 F P M
LOCOMOTIVE
1—Alliance also 7000 feet of 60 lb. track with connections
MIXER AND COOKER
1—25 gallon cooker #75
PULPERS
2—Jones with Talk Reducers and motors 440 volts, 3 phase 60 cycle
1—Lannoye #2
SCREENS
2—Moore & White #2: 1 Liethwalk
2—6 plate—6—12 plate and 6 new 14 plate, flat
SHREDDERS
2—Mitts Merrill #15 C.F. direct cont.² to 125 H.P. 440 v. Motor
1—Waterville: 1—Carthage: 1—Ryther & Pringle; Mitts Merrill type 14A P E S #C 19026—12—44 never used.
SLITTERS
1—26" Kidder 2 drum
1—114 N. & W. 4 drum winds 60" roll
WASHERS
2—2000 lb. Union Mach. Steel tubs
Cal. 1—52" Textile Super Cal.
WINDER
1—50" Cannard
PUMP
1—10x10 Beloit Triplex stuff.

Builders of
ASPHALT COATING, COMBINING MACHINE, GUMMING AND CREPING MACHINE, ROLL GRINDER

FRANK H. DAVIS COMPANY
175 Richdale Ave., Cambridge, Mass.
A-8

FOR SALE

8—New Shartle iron tub beaters with rolls 80" dia., 55" face, anti-friction bearings, stainless steel hoods, ideal for broke beaters, batch breakers or washers, capacity about 4000#.

Osborne Paper Mill Equipment Co.
Fulton, N. Y. TF

PAPER MILL EQUIPMENT
For Sale

110" Hamblet heavy duty mill type Sheeter.
80" Finley Sheeter.
36" Langston Slitter.
63" Oswego hand-clamp Power Cutter.
38" & 54" Automatic Power Cutters.
2—14 x 22 John Thomsons.
36" Waldron Reel.
American heavy duty Cross-Cut Saw.
NEW BALING PRESSES, hand & power.

THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., New York 18

FOR SALE | FOR SALE | FOR SALE

TARENTUM PRODUCTS CORP.

TARENTUM, PENNSYLVANIA

1—Majestic Jordan #A-235, complete with new filling, 3/16" tackle, No. 6 Fast Jordan Coupling, and following drive:
1 Westinghouse Induction Motor type CS 375 HP 230 V 3 ph 60 cy 97 amp. 380 RPM Ser. #1463196 complete with one control panel, including one Westinghouse 300 amp. Oil Circuit Panel.
1 set Disconnect Switches.

1—Westinghouse DC Motor 75 HP 230 V 265 amp 575 RPM Frame 183 Serial #4778560. Complete with starting control, circuit breaker and motor.

1—Elliott Water Pump, capacity 500 gallons per minute, serial #57075. Direct connected to one G.E. Motor 25 HP DC Type CD 85-230 91.3 amps 1750 RPM Ser. #1530365. Complete with one starting control and switch.

1—Westinghouse Generator 70 KW 250 V DC 280 amp. 375 RPM Ser. #345451 with one Field Rheostat, one two-pole circuit breaker 600 amp, one Westinghouse 500 amp. ammeter and shunt. This Generator driven by Buckeye Steam Engine, 100 lbs. steam pressure engine #5156.

1—2000 KW AC Turbine Generator complete with all accessories.

1—Allis-Chalmers Induction motor 250 HP 870 RPM 2200 volts, 3 ph 60 cy 59 amp Serial #2K13566.1.

1—G.E. Induction Motor type KT 326-6-25-1200 Form B 3 ph 60 cy 220 V 25 HP 61 amp. 1200 RPM Ser. #1053934 complete with one G.E. Oil Switch type F Form K20 80 Amp 600 V Ser. #368400.

1—G.E. Starting Compensator CR 1034 220 V 3 ph 60 cy type NR 1622.

1—G.E. Induction Motor (slipring) Frame 15A 150 HP Form M 720 RPM 2200 V 3 ph 60 cy 36 amp. Ser. #1180132.

1—G.E. Induction Motor (slipring) Frame 15A 150 HP Form M 720 RPM 2200 V 3 ph 60 cy 36 amp.

1—Westinghouse 30 HP DC Motor 220 V 117 amp. 975 RPM Ser. #233501.

1—G.E. Motor DC Type MP Form H 20 HP 1025 RPM 220 V 70 Amp. Ser. #19880, complete with manual starting equipment.

1—104" Sheet Cutter complete with stands for 10 rolls, and layboy.

1—G.E. Motor DC Type RC30 Form A 15 HP 850 RPM 230 V 53.5 amp. Ser. #957750, complete with variable speed control for armature and field.

1—G.E. Motor DC 7.5 HP 230 V 30.2 amp 850 RPM Type RC-29A Form A29 Ser. #1145541.

1—G.E. Motor DC 10 HP 230 V 375.1 Amp. 850 RPM Type RC 29 Form A29 Ser. #1148660.

1—Westinghouse DC Motor type S 5 HP 220 V 21 amp. 1300 RPM Ser. #112692.

1—G.E. Motor DC 35 HP 129 amp. 230 V 700 RPM DLC 202 Form A Compound Ser. #434542, complete with starting control.

1—G.E. Induction Motor (slipring) Type IE 13AA-4-150-1800 Form M 3 ph 60 cy 2200 V 150 HP 34.5 amp 1745 RPM Ser. #3884576 complete with panel. One G.E. Switch Panel type ATI 59008, one Drum Controller and Resistance, variable speed.

1—Allis-Chalmers DC Motor 10 HP 220 V 500 RPM #38637.

1—Commercial DC Motor 10 HP 230 V 40 amp 730 RPM Ser. #3609, complete with variable control.

1—Master Electric Worthington Pump and Motor. Pump is good for 100 gal. per minute 5 HP Motor 230 V DC 3425 RPM Ser. #CC-3495.

1—Robbins & Myers Hoist ½ HP 230 V DC 400 RPM Ser. M71309KH.

1—Master Electric Gear Head Motor 1 HP 230 V DC 1725 RPM Ser. CE863.

1—Shepard Liftabout Electric Hoist 2,000 lb. capacity 230 V DC Serial #11339.

1—Wright Electric Hoist 1,000 lb. capacity 230 V DC 1200 RPM Ser. #27668.

3—ILG Ventilating Fans ¼ HP 230 V DC 855 RPM.

2—G.E. CP 27 Compressor Head Air Pumps 230 V DC Complete with pressure line switches.

1—Allis-Chalmers DC Motor 5 HP 220 V 1050 RPM Ser. 44037.

1—Westinghouse DC Motor 10 HP 40 amp 230 V 1725 RPM Frame 60L Ser. #143833.

1—Daniels Rag Cutter #2.

1—Horizontal Rotary Digester 7' dia., 22' long, with gearing reduction.

1—Horizontal Rotary Digester 8' dia., 20' long, with gearing reduction.

1—Bucket type conveyor elevator. Buckets size 5" x 17", approximately 48' long, lifts on incline approx. 15'. All steel construction with Rex Chain Drive, complete with one Foote Bros. gear reducer type 25W, 43 to 1 ratio, Ser. 188052, driven by one G.E. DC Motor type RC27A Form A-58 5 HP 19.1 amp 230 V 1150 RPM.

1—R40 Reducer, 12 to 1 ratio.

1—Slipring motor 75/150 HP Type CW 3 ph 60 cy 2200 volts, 290/580 RPM Ser. #2224679, complete with starting equipment.

1—Slat conveyor steel construction 4' wide, 3' high, 42' long, driven by one Jones Spur Gear Reducer, ratio 27 to 1, Ser. #10133. Driven by one Sprag Electric DC Motor type LC 10 HP 37.2 amps 230 V 100 RPM Ser. #DL 2005213, complete with sheaves and V Belt drive, one Westinghouse Automatic Starter.

1—John Waldron Embosser #711.

1—Thorpe Hydraulic Press complete with 4 steam platen plates 40" x 40", and one Equalizer Pump.

1—Four cylinder Holyoke Duster.

1—Two-color Kidder Rotary Press, with various plates and printing rolls.

3—Beaters, 1000 lb., cast iron tub, complete with roll.

2—Beaters, high speed, 2000 lb., cast iron tub, complete with roll.

1—Banded type Emerson Beater Roll, 54" face, 56" diameter, complete with stands.

For Sale—CELLOPHANE

Available in small cut size sheets, either moistureproof or plain. Fairly prompt delivery. Address Box 46-534 c/o Paper Trade Journal. A-8

FOR SALE

80M lbs. pink and blue 25% rag content laid papeterie paper, sizes:

21 x 32½

22 x 34

Immediate delivery.

Address Box 46-533
c/o Paper Trade Journal

A-8

FOR SALE

4—2A Bird screens.
2—12 plate flat screens.
4—10 plate flat screens.
1—#4 Shartle refiner.

FRANK P. LYDEN—FORT EDWARD, N. Y.

A-15

1—24" Standard Fales Slitter and Rewinder equipped to slit ½" widths all the way across web.
1—30" Late type Model B Fales Slitter and Rewinder equipptd with knife setups to cut following widths: ¼, 9/32, 5/16, 11/32, ⅜, 13/32, 7/16 and ½ inches.
1—68" Type 40B Hudson Sharp Toilet Paper Converter. Perforates 5" lengths toilet or 10" paper towels.
1—64" Creping Machine. Creping roll 12" in diameter with doctor blade. Two dryers 36"x64" and rewind.
6—Potdevin Bag Machines, making flat and square bags from ¼ to 25 lbs.
1—110" Double-drum Waldron late type shear cut Hydraulic Slitter and Rewinder.
1—44" wide 7 roll stack of Holyoke Super calenders, 4 chilled iron and 3 cotton rolls, offered rebuilt and guaranteed.
1—Noble & Wood 100 lb. Experimental Beater.
4—Complete spiral tube winders with automatic cut-offs, also recutter. 2 Langston and 2 Knowlton manufacture.
1—High Speed, 3000 per hour production, garment bag making machine with 2 color printing attachment and AC motor equipment. Range smallest bag 17½" wide x 30" long; largest bag 23½" x 63" long.

GIBBS-BROWER COMPANY, INC.
31 East 40th St., New York 16, N. Y.

TF

For Sale—One 100 Horse Power Motor, Westinghouse Type F, 60 Cycle, 3 Phase, 220 Volts, 580 RPM. Complete with Compressed Paper Pulley.
Also One Fire Tube Boiler 150 Horse Power Strap Hung in First Class Condition.

WINDSOR LOCKS PAPER CORP.
Windsor Locks, Conn.

A-8

FOR SALE

1—108" Warren Improved 2 drum winder 6 top and bottom slitters.
1—Ryther & Pringle paper duster for book and and magazine stock 8" diameter large end 6" small end 16½" long (Inclined)
1—Low head circulating pump 12" inlet 8" outlet
2—Calendar rolls 12" dia. 88" face 99" between shoulders 6" journals
1—Rubber covered press roll 16" diameter 80½" face 84" between shoulders. Journals 7" diameter.
1—Rubber covered press roll 18" diameter 80½" face 84" between shoulders. Journals 7" diameter.
1—Rubber covered press roll 18" diameter 82½" face 84" between shoulders. Journal 7" diameter.
1—Brass press roll 18" diameter 83" face 84" between shoulders. Journals 7" diameter
1—Granite press roll 18" diameter 80½" face 84" between shoulders, Journal 7" diameter
6—Moore & White collapsible winder shafts 2—46" 2—31" 2—19"
1—Split pulley 72" diameter 20" face, bore 5"
1—Split pulley 60" diameter 19" face, bore 6"
1—#4 Shartle refiner with couplings. (No motor)
4—10 plate flat screens
2—12 plate flat screens
1—1A Bird screen
2—2A Bird screens
2—#2 Bird screens
2—75 H.P. G.E. Motors 600 rpm with grids and starters

FRANK P. LYDEN, FORT EDWARD, N. Y.

A-8

FOR SALE

ANILINE 3 Color Printing Press —absolutely NEW — 26½" wide Printing Rollers either for wrappers or Bag Machine. Box #46-507 c/o Paper Trade Journal. TF

FOR SALE—68" Rice, Barton & Fales Slitter-Rewinder to go on dry end of paper making machine. Thomas W. Hall Company, Stamford, Conn. A-8

FOR SALE

REVAMPING AND REBUILDING MILL AND CAN OFFER FOR SALE

1—Noble & Wood Mammoth Jr. Jordan ¼" Filling. Now operating.
1—Brass covered finishing press roll—17¾" diameter x 88½" face.
1—4000# Capacity motor driven freight elevator with automatic stop control—can be inspected in operation at our plant.
1—6" Lawrence Centrifugal Water pump.
2—8" Barnes Centrifugal Sewage Pumps.
8—100" Screen plates for No. 2-A Bird Screen. Slots. .022—never used after being recut once.
1—Rubber covered press roll 12" diameter by 68" face—Journals 5" diameter by 7¼" long.
1—Rubber covered press roll 12" diameter by 84¼" face—Journals 5" diameter by 7¼" long.
1—20" face cast iron tapered pulley—2 15/16" Bore, Taper 31"-29½".
2—20" face cast iron tapered pulley—3 7/16" Bore. Taper 31"-30".
1—24" face cast iron tapered pulley—3 7/16" Bore, Tapered 31⅝"-29⅝".
2—Steel split pulleys 60" diameter by 31" face —5 15/16" bore.
1—Cast iron split pulley—60" diameter by 21" face by 3½" bore.
1—Cast iron split pulley—40½" diameter by 21" face by 3½" bore.
1—Cast iron split pulley—84" diameter by 36" face by 5 15/16" bore.
1—Cast iron split pulley—72" diameter by 16" face by 16" face by 8⅜" bore.
2 —Steel split pulleys—60" diameter by 41" face by 5 15/16" bore.
1—Paper pulley—24" diameter by 21" face by 4½" bore.
1—Tapered cast iron split pulley. Taper 30" to 28½" by 20" face by 3 15/16" bore.
1—30" x 90" Cylinder mould—7" diameter shaft inside cylinder.
1 9½" diameter x 85" Face Rubber-covered squeeze or wringer roll-Journals 1 15/16" diameter.
1—9" diameter x 88" Face Calender roll—5" diameter journals.
12—6½" dia. x 92" face steel drier felt rolls with 1 7/16" x 6½" Journals.
2—4" Gould centrifugal stock pumps with 2 vane open impeller. Capacity 600 G.P.M. at 40' head—1175 R.P.M. with 10 H.P. Operated less than two years.
2 —Pair Noble & Wood lighter stands complete with lighter beams and bearings for 8" diameter journal beater roll.

A visit to the mill would prove profitable as we have many items for sale too numerous to mention. See our superintendent, Mr. O. P. Fussell at our plant in Walloomsac, N. Y.

WALLOOMSAC PAPER MILLS, INC.
Mills: Walloomsac, New York
Main Office: 25 Vanderbilt Avenue
New York 17, N. Y. TF

FOR SALE

BREAKER BEATER

1—Dilts Bandless Roll 62" diameter x 54" face—70 tons daily capacity.
Equipped with Shartle Bros. Ragger.

1—Appleton Breaker Beater—New Perforated Back Fall — Beater roll 48" face x 54" diameter. (Newly Filled)—No tub.

J. J. ROSS COMPANY
250 Frelinghuysen Ave., Newark 5, N. J.
Tel. Bigelow 3-3720 A-8

FOR SALE—Moore & White Style K.T. Duplex Cutter with one Revolving Duplex Slitter having 94" length of knives and three each top and bottom Slitters on each of two slitter shafts and with a two reel unwinding backstand. Ready for immediate shipment. Theo. Adams, 111 West Washington St., Chicago, 2, Ill. A-29

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FOR SALE

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FOR SALE — 64" Seybold Twentieth Century Cutter, thoroughly rebuilt and fully guaranteed. Address Box 46-535 care Paper Trade Journal. A-8

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From 60 to 80" wide to produce paper boards, such as Chip, News, Kraft, etc. from paper waste or pulp in .016 caliper and up. Will consider moving plant or operating where ours is. Will buy outright or trade with our paper box machinery for corrugated, solid fibre, setup and folding boxes. Address Box 46-497, c/o Paper Trade Journal. A-29

WANTED—Old Evaporator Tubes 1", 1¼" and 2" O. D. Why sell them for junk? Write us if you have any. Also when you get ready to change over. S. Bender, P. O. Box 271, Shreveport, La. A-8

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WANTED—5—42" diameter x 86" face C. I. Dryers. Address Box 46-491 care Paper Trade Journal. A-15

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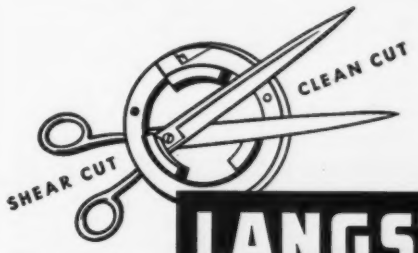

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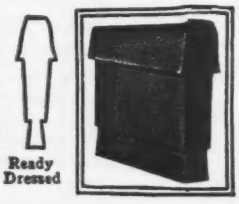

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Flintkote Company
Monsanto Chemical Co.
National Adhesives Division of National Starch Products, Inc.
Philadelphia Quartz Co.
Stein, Hall & Co., Inc.
United States Rubber Co.

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Moore & White Co.
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Shartle Brothers Machine Co.
Valley Iron Works Co.

AIR CONDITIONING
Steamaire Company

ATOMIZERS
Steamaire Company

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Potdevin Machine Co.
Shartle Brothers Machine Co.
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Weber, Herman G.

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Valley Iron Works Co.

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The Moore & White Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

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Magnus Metal Corp.
Montague Machine Works
Raybestos-Manhattan Inc. Manhattan Rubber Division
Rollway Bearing Co.
Shartle Brothers Machine Co.
SKF Industries, Inc.
Timken Roller Bearing Co.
Valley Iron Works Co.
T. B. Woods' Sons Company

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Hermann Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
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Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

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Shartle Brothers Machine Co.
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United States Rubber Co.
T. B. Wood's Sons Company
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Moore & White Co.
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Pennsylvania Salt Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.

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Montague Machine Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

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Babcock & Wilcox Co.

BOILERS (Electric)
Steamaire Company

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Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

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Lobdell Car Wheel Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works
Waldron Corp., John

CASEIN
The Borden Company
Casein Company of America

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Farrel-Birmingham Co.
Grinnell Company
Hamblet Machine Co.
Hardinge Co., Inc.
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Lobdell Car Wheel Co.
Magnus Metal Corp.
Montague Machine Co.
Noble & Wood Machine Co.
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Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Co.

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Ross, J. O., Eng. Co.
Shartle Brothers Machine Co.

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Amer. Resinous Chemicals Corp.
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Calco Chemical Co.
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Diamond Alkali Co.
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Dow Chemical Company
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Mallinckrodt Chemical Wks.
The Mathieson Alkali Works, Inc.
Monsanto Chemical Company
National Oil Products Co.
Naugatuck Chemical Div. of U. S. Rubber Co.
Niagara Alkali Company
Paper Makers Chemical Department, Hercules Powder Co.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pioneer Salt Company
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
United States Rubber Co.
Witco Chemical Co.
Wyandotte Chemicals Corp.

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The Cowles Detergent Co.
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Paper Makers Chemical Department, Hercules Powder Co.
Magnus Chemical Co.
Monsanto Chemical Co.
Nichols Engrg. & Research Corp.
Oakite Products, Inc.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
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Hardinge Co., Inc.
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Stearns Magnetic Mfg. Co.
T. B. Wood's Sons Company

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Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
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Ferguson, Hardy S.
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J. E. Sirrine & Co.
South Wabash Engrg. Co.
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Cochrane Corp.

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Cochrane Corp.
Stickle Steam Specialties Co.

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Ross Engineering Corp., J. O.

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Montague Machine Co.
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Westinghouse Electric Corporation
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South Wabash Engrg. Co.
Taylor Stiles & Co.

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Steamaire Company
Valley Iron Works Co.

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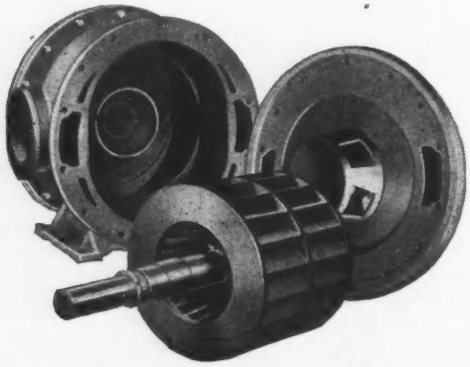

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Shartle Brothers
United States Rubber Co.
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Shartle Brothers Machine Co.
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Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

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Noble & Wood Machine Co.
Ross Engineering Corp., J. O.
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Worthington Pump & Machy. Corp.

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Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.
Reading Chain & Block Corp.

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Manhattan Rubber Division
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National Technical Laboratories
B. F. Perkins & Son
Taber Instrument Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
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INSULATION
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JOINTS
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Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Valley Iron Works Co.

KNOTTERS
Fibre Making Processes, Inc.

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Bauer Brothers Co.
The Biggs Boiler Works Co.
W. H. & L. B. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works

LAY BOYS
Hamblet Machine Co.
Moore & White Co.
Shartle Brothers

LINTER COTTON
The Railway Supply & Mfg. Co.

LUBRICANTS
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Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

LUBRICATORS
Hills-McCanna Co.

MATERIAL HANDLING
Automatic Transportation Co.
Northwest Engrg. Co.
Reading Chain & Block Company

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Car Wheel Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

MOISTENING EQUIPMENT
The Spray Engineering Co.
Steamaire Company

MOISTURE CONTENT CONTROL
Steamaire Company

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
Continental Electric Co.
De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric Corporation

NOZZLES
Steamaire Company

PACKING BOXES
Johnson Corporation
Shartle Brothers Machine Co.

PACKING
Johns-Manville Sales Corp.
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
United States Rubber Co.

PAPER MACHINES
Bagley & Sewall Co.
Black-Clawson Company
Downingtown Mfg. Co.
Thomas W. Hall Co.
Moore & White Co.
Pusey & Jones
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Wks.
Valley Iron Works Co.

PAPER MILL BUILDERS
Merritt-Chapman & Scott Corp.
The Rust Engrg. Co.

PAPER TUBE MACHINERY
Theo. Adams
Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.
South Wabash Engrg. Co.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.
Waldron Corp., John

PENSTOCKS, WELDED STEEL
The Biggs Boiler Works Co.

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

PIPE
Black-Clawson Company
Crane Company
Deublin Company
Grinnell Company
Johns-Manville Sales Corp.
Shartle Brothers Machine Co.
Stowe-Woodward, Inc.
Taylor Forge & Pipe Works
Walworth Company

PLATERS
Perkins & Son, Inc., B. F.

PLATES
Black-Clawson Company
Hendrick Mfg. Co.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Timken Roller Bearing Co.

PLATE WORK (Steel & Alloy)
The Biggs Boiler Works Co.

PLUGS
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

PRESSURE VESSELS, STEEL AND ALLOY
The Biggs Boiler Works Co.

PRESSES
Black-Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Fibre Making Processes, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
South Wabash Engrg. Co.
Valley Iron Works Co.
Waldron Corp., John
Weber, Herman G.

PULPERS
Bauer Brothers Co.

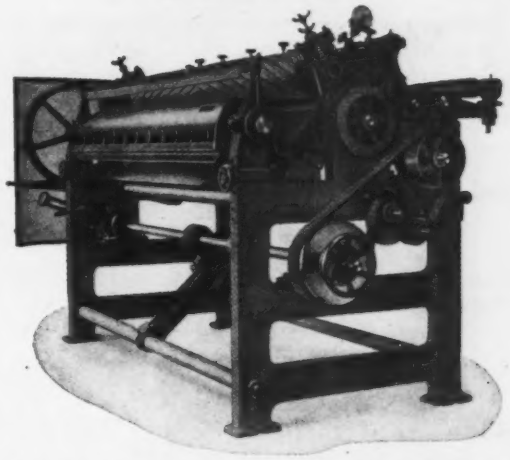
PULPS
Andersen Co., J.
Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
Elof Hansson, Inc.
Lyddon & Co. (America) Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PULPSTONES
Norton Company

PUMPS
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Buffalo Pumps, Inc.

MODEL 28

ROLLER BEARING CUTTER



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Convolute and Spiral Tube winding
Side Seams of Waxed Cartons
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NONINFLAMMABLE—Will not burn or support fire.

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KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

Fig. 45 — Biggs 14 ft. dia. welded rotary digester with worm-and-segment drive.

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SINCE 1887 Biggs globe and cylinder rotary as well as stationary digesters have been universally used in the paper industry. These units are furnished in all sizes; are made from carbon or alloy steels for various working pressures with drives, linings and fittings to suit individual processes. Biggs "rotary boilers" are most versatile and economical in cooking, bleaching and otherwise processing a wide range of materials for standard and special operations. Units installed by Biggs in 1890 are still in daily operation with a minimum of maintenance. Biggs maintains a competent erecting organization.

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Write for Bulletin 45.

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WHERE TO BUY

Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hardinge Co., Inc.
Hills-McCanna Co.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Morris Machine Works
Nash Engineering Co.
Noble & Wood Machine Co.
Paper Converting Mch. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Steamaire Company
Warren Steam Pump Company
Worthington Pump & Mchy. Corp.

RAG CUTTERS
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

RECOVERY SYSTEMS
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REELS
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
The Hermann Manufacturing Co.
E. D. Jones & Sons Co.
Murray, D. J., Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Shartle Brothers
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan
Westinghouse Electric Corporation

RESINS
Amer. Cyanamid & Chemical Corp.
Amer. Resinous Chemicals Corp.
Monsanto Chemical Co.
The Resinous Prod. & Chem. Co.

ROLLS
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp.
Lobdell Co.
Montague Machine Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Philbrick Engrg. & Machine Co.
Pusey & Jones Corp.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
Roehlen Engraving Co.
J. J. Ross Company
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnetic Mfg. Co.
Stowe-Woodward, Inc.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
The Cincinnati Rubber Mfg. Co.
Stowe-Woodward, Inc.

ROLL STANDS
Cameron Machine Co.
The Kohler System Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.

ROOFING MATERIALS
Johns-Manville Sales Corp.

ROTARY BOILERS
Biggs Boiler Works

SATURATING MACHINES
Black-Clawson Company
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

SAVEALLS
Bulkley, Dunton Pulp Co., Inc.

SCALES
Merrick Scale Mfg. Co.

SCREEN PLATES
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.
Union Machine Co.
Union Screen Plate Co.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Harrington & King Perforating Co.
Hendrick Manufacturing Co.
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.

SHEET MACHINES
Thomas W. Hall Co.
The Hermann Manufacturing Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
Valley Iron Works Co.

SHOWER PIPES
Bird Machine Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
Moore & White Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.

SIZING
Amer. Cyanamid & Chemical Co.
Amer. Resinous Chemicals Corp.
Black-Clawson Company
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Flintkote Company
Monsanto Chemical Co.
National Oil Products Co.
Paper Makers Chemical Department, Hercules Powder Co.
Philadelphia Quartz Co.
Pioneer Salt Company
Socony-Vacuum Co.
Stein, Hall & Co., Inc.

SLIME CONTROL
Falls Chemical Products Co.
Magnus Chemical Co.
Mallinckrodt Chemical Wks.

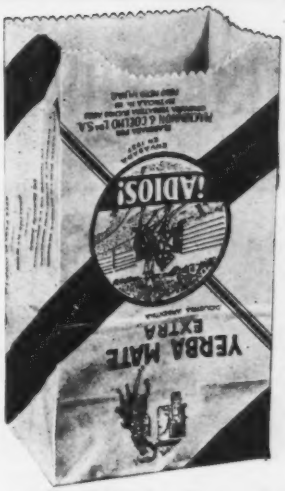
SLITTERS
Theo. Adams
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Smith & Winchester Mfg. Co.
South Wabash Engrg. Co.
Valley Iron Works Co.
Waldron Corp., John

SMOKE STACKS
The Biggs Boiler Works Co.

SOLENOID VALVES
Steamaire Company

WHERE TO BUY

SPRAYING EQUIPMENT
The Spray Engineering Co.
Steamaire Company
STAINLESS STEEL
Anti-Corrosive Metal Products Co., Inc.
STARCH
Amer. Cyanamid & Chemical Corp.
Clinton Industries, Inc.
National Starch Products, Inc.
Stein, Hall & Co., Inc.
STATIC ELIMINATORS
Steamaire Company
STEAM SPECIALTIES
Babcock & Wilcox Co.
Cochrane Corp.
Johnson Corp.
Perfecting Service Company
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.
STEEL TANKS
The Biggs Boiler Wks. Co.
STRAPPING & STRAPPING MACHINES
Acme Steel Company
The Stanley Works
STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.
SUCTION BOXES
Black-Clawson Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Westinghouse Electric Corp.
SULPHUR
Amer. Cyanamid & Chemical Corp.
Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company
SULPHUR BURNERS
Valley Iron Works Co.
SULPHUR DIOXIDE
Ansul Chemical Company
SUPERCALENDERS
B. F. Perkins & Son, Inc.
TALC
Amer. Cyanamid & Chemical Corp.
W. H. Loomis Talc Corp.
TANKS
Cochrane Corp.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
The Noble & Wood Machine Co.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
Rodney Hunt
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Stowe-Woodward, Inc.
United States Rubber Co.
Waldron Corp., John
B. F. Perkins & Son, Inc.
Testing Machines, Inc.
THICKENERS, DECKERS AND SAVEALLS
Bird Machine Company
Bulkley, Dunton Pulp Co., Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Hardinge Co., Inc.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.
TITANIUM
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company
TOOLS
Acme Steel Company
Ingersoll-Rand Co.
The Stanley Works
Walworth Company
TRUCKS
Automatic Transportation Co.
TRAPS
Armstrong Machine Works
Cochrane Corp.
Crane Co.
Grinnell Company.
Johnson Corporation
Shartle Bros. Mch. Co.
TUBS
Rodney Hunt Machine Co.
Noble & Wood Machine Co.
Shartle Brothers
Valley Iron Works Co.
TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.
Westinghouse Electric Corp.
Worthington Pump & Machy. Corp.
USED EQUIPMENT
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
Ross Paper Machinery Co.
Shartle Brothers Machine Co.
VALVES
The Bristol Company
Cochrane Corp.
Crane Company
Dilts Machine Works
Fibre Making Processes, Inc.
The Foxboro Company
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Permutit Company
William Powell Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Valley Iron Works Co.
Walworth Company
VALVES, LUBRICATED PLUG
American Car & Foundry Co.
VATS & VAT PARTS
Union Machine Co.
Union Screen Plate Co.
WASHERS
Bird Machine Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.
WATER CONDITIONING
Cochrane Corp.
The Permutit Company
WATER DISPERSIONS
American Anode, Inc.
WAXING MACHINERY
Black-Clawson Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.
WELDING EQUIPMENT
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company
Westinghouse Electric Corp.
WET MACHINES
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Moore & White Co.
Montague Machine Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
WINDERS AND REWINDERS
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Smith & Winchester Mfg. Co.
South Wabash Engrg. Co.
Waldron Corp., John
WIRES
Appleton Wire Works
Black-Clawson Company
Bulkley, Dunton Pulp Co., Inc.
Cheney Bigelow Wire Works
Hayden Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Shartle Brothers Machine Co.
WOOD PEELERS
Nekoosa Fdy. & Mch. Wks., Inc.
WOOD SPLITTERS
Carthage Machine Co.



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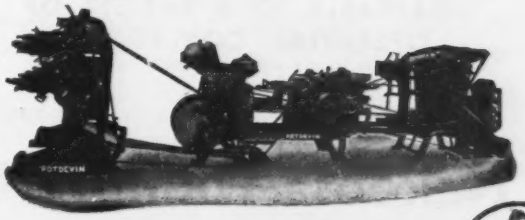

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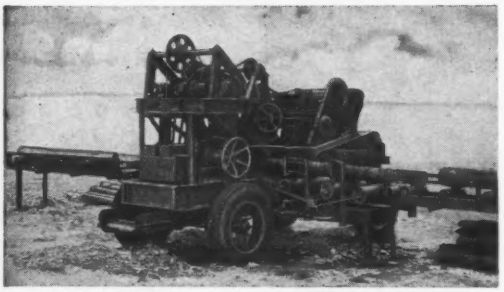

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No Wood Loss

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Nekoosa, Wis. **U. S. A.**

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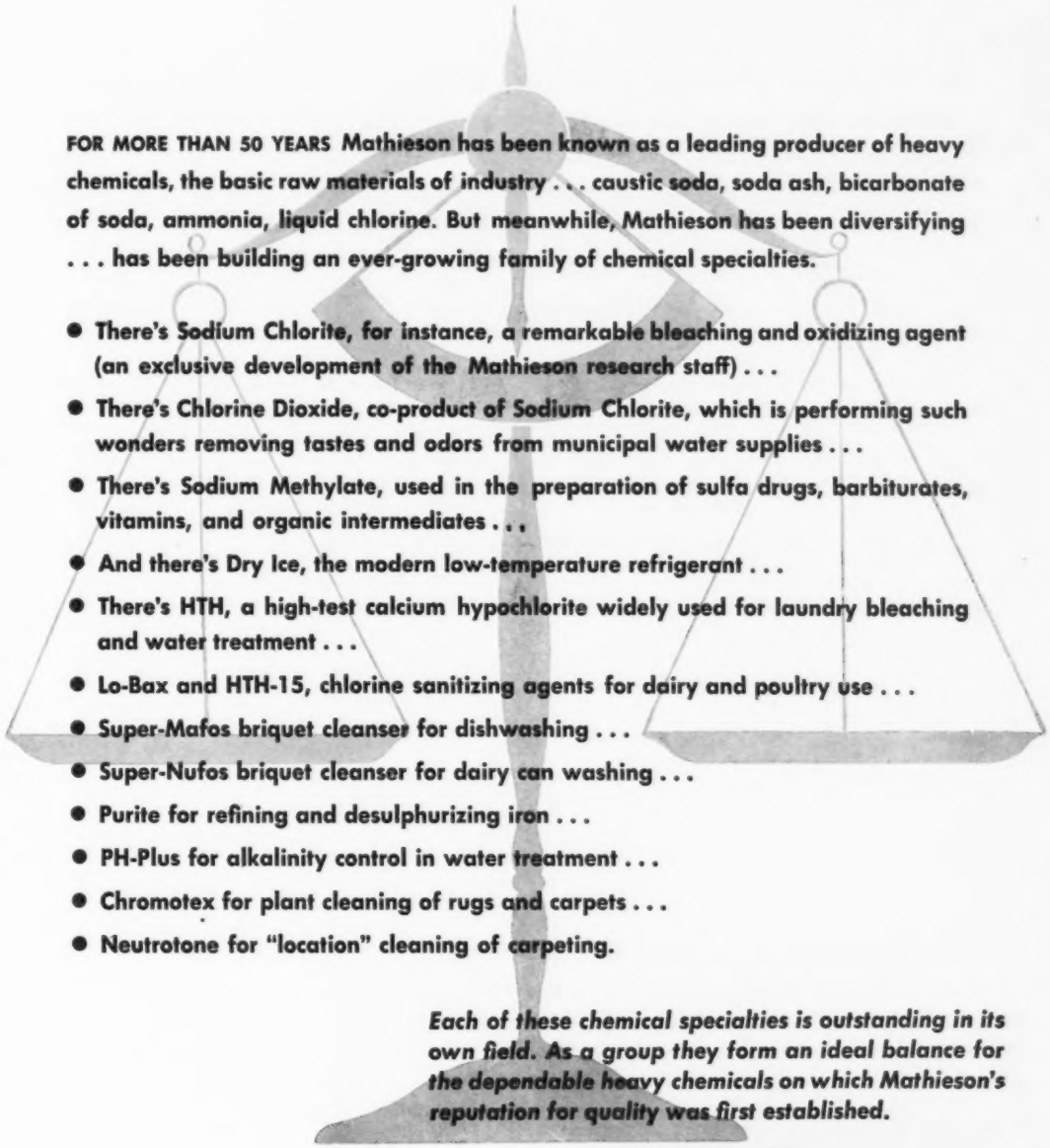

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- Lo-Bax and HTH-15, chlorine sanitizing agents for dairy and poultry use . . .
- Super-Mafos briquet cleanser for dishwashing . . .
- Super-Nufos briquet cleanser for dairy can washing . . .
- Purite for refining and desulphurizing iron . . .
- PH-Plus for alkalinity control in water treatment . . .
- Chromotex for plant cleaning of rugs and carpets . . .
- Neutrotone for "location" cleaning of carpeting.

Each of these chemical specialties is outstanding in its own field. As a group they form an ideal balance for the dependable heavy chemicals on which Mathieson's reputation for quality was first established.

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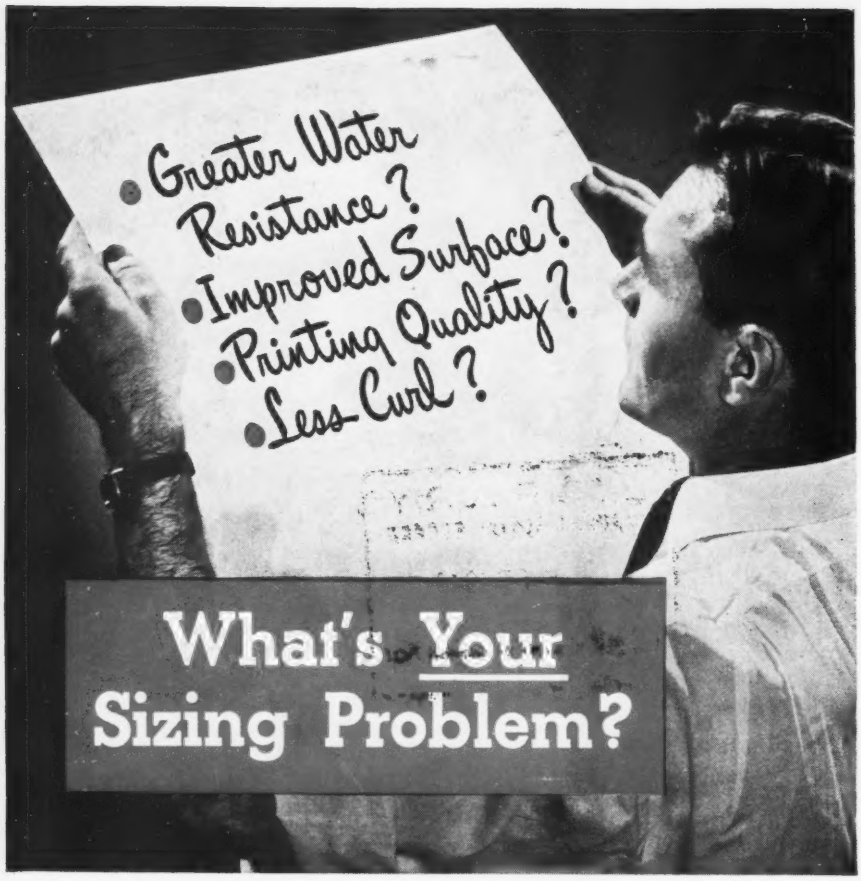

S/V Ceremul A in the Beater Improves Sizing—Gives Other Advantages!

● With small quantities of S/V Ceremul A added to the beater furnish, you can expect important improvements in your finished paper. Used in varying amounts—up to a 40 percent replacement of rosin—it also will help you solve many special problems which may be encountered.

For instance, by reducing the tendency to curl, and providing good laying qualities, this economical wax emulsion is of special value in sizing offset, tablet, map and hanging papers. In other applications, such as wrapping and poster papers, its ability to impart water resistance is important.

For general use with printing and writing papers, it provides uniformly good sizing. Better appearance is assured. Printing and writing qualities are improved.

★ ★ ★

Ask your Socony-Vacuum Representative for details covering application for all purposes.

Process Products
SOCONY-VACUUM

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Better, Lower-Priced PROCESSING for the Paper Industry!

From pulp processing to treatments for finished papers, Socony-Vacuum Process Products are now being used at almost every step of paper manufacture. Here are examples of the products available.

BEATER-SIZING
S/V Ceremuls A & C
Improve sizing and finish. Reduce curl.

★

SURFACE-SIZING
S/V Ceremul A
Adds water resistance. Improves finish.

★

WATER-ABSORBENCY
S/V Sovasorb A
Improves softness and increases re-wetting properties.

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PITCH REMOVAL
Special Solvents
Aid in the removal of pitch and asphalt.

★

HEAT-SEALING
S/V Microcrystalline Waxes
Improve heat-sealing properties.

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OILED PAPERS
S/V Prorex Oils C & P
Produce odorless food wraps.

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MEAT WRAPS
S/V Petrolatums
Produce odorless, bloodproof papers for wrapping meat.

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